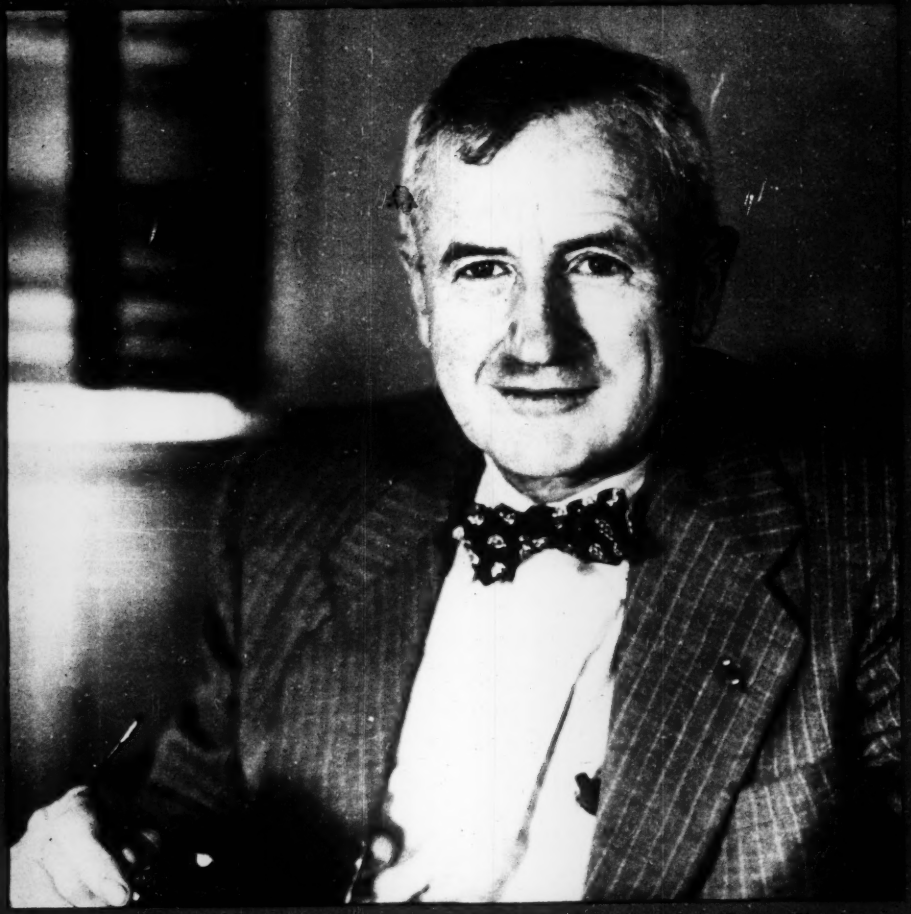
ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

JULY 22, 1948



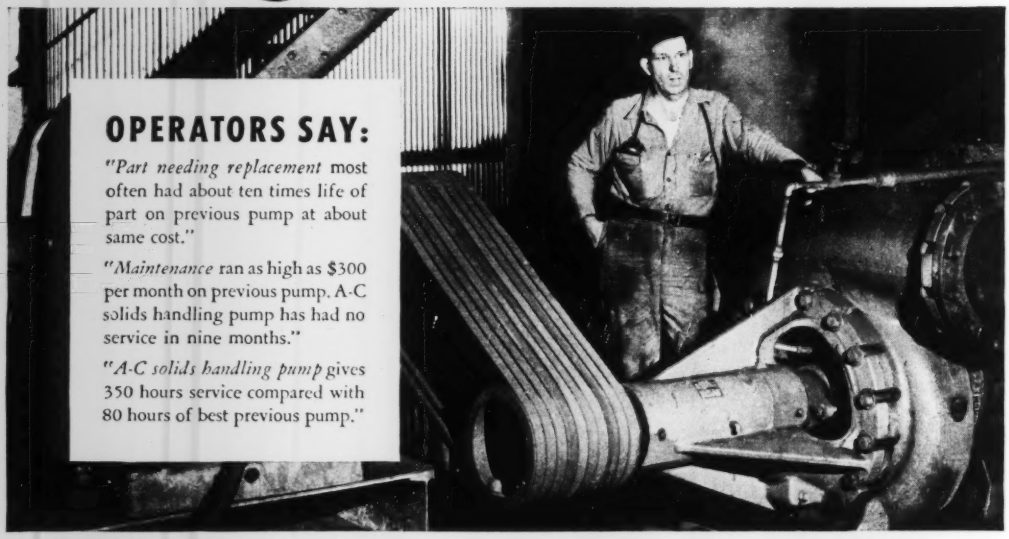
Maj. Gen. Thomas F. Farrell—from A-bombs to plant closures (See p. 9)

• • •

WORLD'S LARGEST OZONE PLANT INSTALLED AT PHILADELPHIA

SOLIDS PUMP EXPERIENCE PROVES

Long Parts Life!



OPERATORS SAY:

"Part needing replacement most often had about ten times life of part on previous pump at about same cost."

"Maintenance ran as high as $300 per month on previous pump. A-C solids handling pump has had no service in nine months."

"A-C solids handling pump gives 350 hours service compared with 80 hours of best previous pump."

REPLACE WORN PARTS IN HALF HOUR

YOU CAN GET the two things that metallic and non-metallic material processors want most in solids-handling pumps. Allis-Chalmers solids-handling pumps give you longer life between servicings and they make it easy and economical to replace parts.

Allis-Chalmers solids-handling pumps are designed with extra strong parts, built of *Allisite*, a special abrasion-resistant alloy, and application-engineered by experts with many years of experience in solids-handling pump problems.

SAVES ON REPAIR TIME

When parts must be replaced, as they must in all types of solids handling pumps, the Allis-Chalmers solids handling pump will save you hours of labor, cut down-time to a minimum and lower repair costs.

This pump can be dismantled and reassembled in a half hour without disturbing piping. Parts with varying rates of wear are separated. Only those actually worn are replaced. Three sets of bearings, brackets and shafts cover all pump sizes, reducing parts inventory as much as 2/3.

GET THE FACTS

Discuss your solids-handling equipment problems with an Allis-Chalmers pump engineer. He can show you dollars and cents savings you can make. Contact your A-C Sales Office today. Or write for Bulletin 6381.

A-2762

ONLY FIVE WEARING PARTS

Shaft sleeve, impeller, casing, two wear plates. All easy to handle and easy to replace. Pump can be dismantled or assembled in a half hour without disturbing piping.

ALLIS-CHALMERS, 1018A SO. 70 ST.
MILWAUKEE, WIS.

Allisite is an Allis-Chalmers trademark.

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GA Since 1905

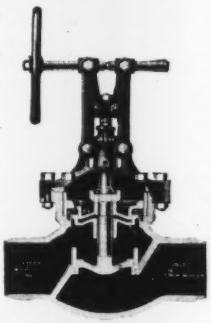
known for

Quality and Dependability

GOLDEN-ANDERSON POSITIVE CONTROL

Valves GA

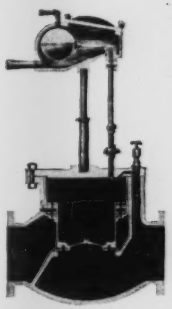
For every Service



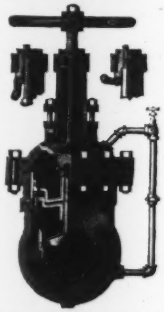
G-A Single Acting Non-Return Valve, Toggle Yoke Design, Globe Pattern

- Non-Return Valves
- Throttle and Automatic Engine Stop Valves
- Emergency Trip Valves
- Steam and Water Pressure Reducing Valves
- Pressure Reducing and Sustaining Valves
- Pressure Reducing and Relief Valves
- Pressure Reducing and Check Valves
- Water Pressure Relief Valves
- Altitude Control Valves
- Float Operated Control Valves
- Water Service Valves
- Coke Quenching Valves
- Counter-Balanced Railroad Standpipe Valves

• and many other types for every service



G-A High Pressure Controlling Float Valve, Globe Pattern



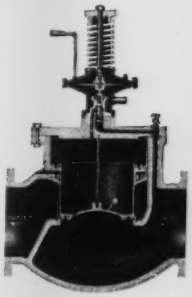
G-A Combined Throttle and Automatic Engine Stop Valve, Globe Pattern

Since 1905 Golden-Anderson has furnished dependable automatic control valves for some of America's most important Industrial and Power Plant applications. Choose from more than 1500 standard types, or specially designed valves to solve your most difficult *flow control* problem. Write for descriptive catalog.

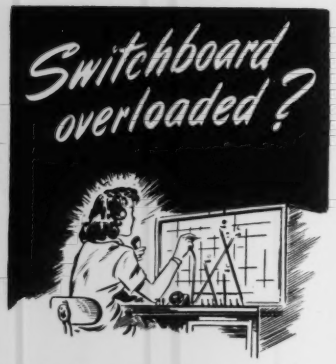
LIFE AND PROPERTY PROTECTION
VALVES SINCE 1905

GOLDEN-ANDERSON
Valve SPECIALTY CO.

Keenan Bldg., Pittsburgh 22, Pa.



G-A Single Acting Altitude Valve, Globe Pattern



REDUCE THE LOAD ON BOARD AND OPERATOR WITH

WHEELER SELF-POWERED TELEPHONES

EFFICIENT TALKING AND RINGING UP TO 20 MILES

A pair of these compact, convenient telephone units quickly and inexpensively sets up auxiliary communication lines, *without batteries or power supply connections.* Use in plants, offices and other locations where immediate, efficient service saves time and money. Supplements PBX and intercom systems. See your jobber or write direct for descriptive booklet SA-8.

THE WHEELER INSULATED WIRE CO., INC.

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WATERBURY 91, CONNECTICUT

DIVISION OF THE SPERRY CORPORATION

ENGINEERING NEWS-RECORD

VOLUME 143 JULY 28, 1949 NO. 4

WALDO G. BOWMAN
Editor

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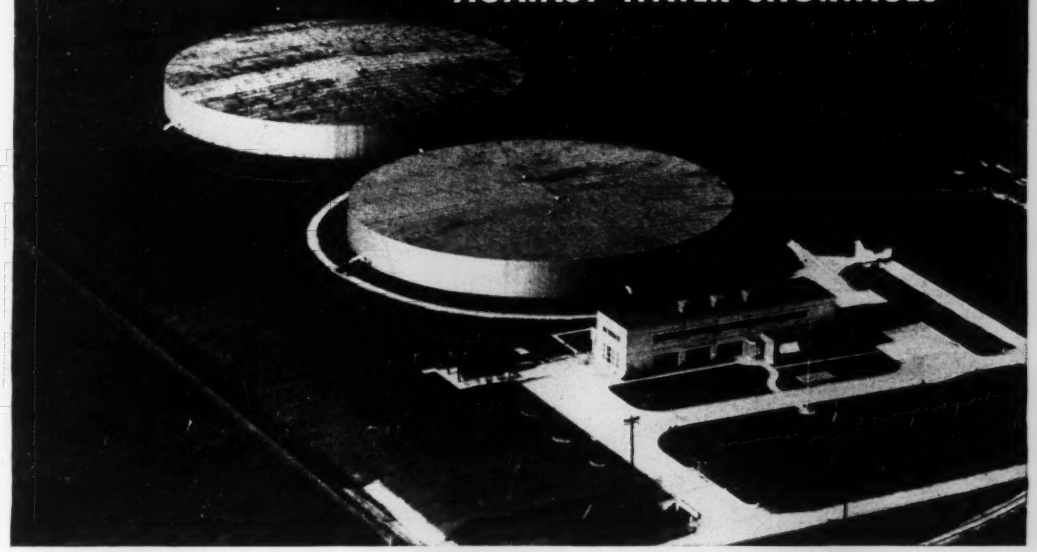
Double Indemnity

AGAINST WATER SHORTAGES



HOUSTON stores ten million gallons of water in two welded steel reservoirs

The two steel reservoirs shown in the above aerial view provide Houston, Texas, with "double indemnity" against water shortages. They are 206 ft. in diam., 20 ft. 6 in. high, and have a capacity of 5,000,000 gals. each.

Like many other municipalities, Houston uses welded steel tanks for storing large volumes of water because they are economical to construct and easy to maintain. Regular painting keeps the steel in good condition and the welded joints are made water tight and stay that way.

Ground-level reservoirs like those shown above are just one of the many types of tanks we build for municipal and industrial water supply systems. For estimating figures on tanks and other steel plate structures, write our nearest office outlining your requirements.

Advantages of

HORTON

Welded Steel Reservoirs

- Superior construction because steel will not crack and develop leaks if there should be uneven settlement.
- Welded joints are made tight and stay water tight.
- Low maintenance costs, since regular painting will usually keep the steel in good condition.
- Economy of all-welded steel construction is reflected in original cost.

CHICAGO BRIDGE & IRON COMPANY

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Los Angeles, 14 . . 1511 General Petroleum Building
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San Francisco, 11 . . 1220—22 Battery St. Building
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Tulsa, 3 . . . . . 1617 Hunt Building

Plants in Birmingham, CHICAGO, SALT LAKE CITY, and GREENVILLE. In Canada: HORTON STEEL WORKS, Limited, FORT ERIE, ONT.

THE TIGER BRAND SPECIALIST VISITS THE PENN-LINCOLN PARKWAY

and learns a trick or two about wire rope care

"I stopped to see Charlie Dinardo the other day. He's in charge of Dinardo, Inc.'s job of building the 980-foot concrete arch bridge over Nine Mile Run in the Penn-Lincoln Parkway project at Pittsburgh. It's one of the biggest concrete arch jobs in the country in recent years.

"About 15,000 yards of ready-mixed concrete go into this bridge, and 98% of it is being poured by cranes--all equipped with Tiger Brand Wire Rope. They were pouring about 250 yards a day, using a one-yard bucket on a crane equipped with a 105-foot boom and 18-foot jib. In additior to the pouring, the four cranes have handled all steel erection and form setting on the bridge. A job like this really puts rope to a test!

SUPERINTENDENT Charlie Dinardo tells the Tiger Brand Specialist how he obtains maximum life from his Tiger Brand Wire Rope on this rugged job.

"Charlie says he is getting plenty of service from his Tiger Brand Rope. It holds up for three months' steady work on the hoist, and he hasn't replaced a boom rope in over a year.

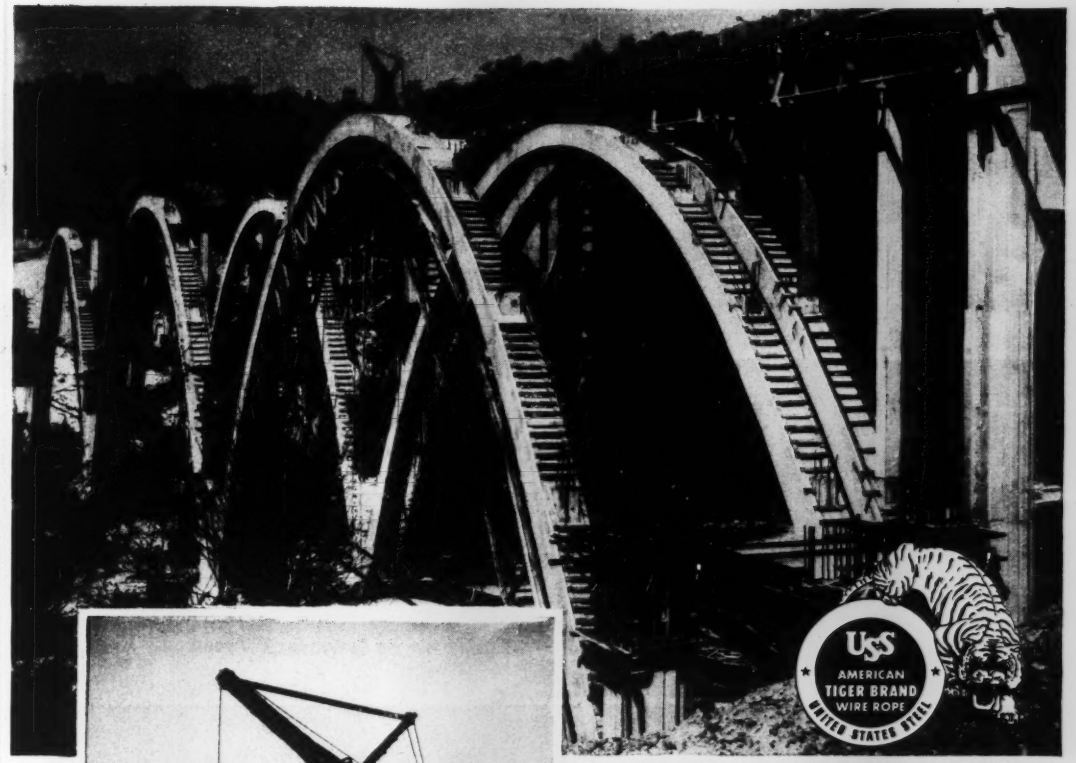
"Charlie passed on a couple of tips on how he gets this kind of service on such a rugged job. First, he uses nothing but Tiger Brand. Second, he observes extra precautions during installation, being especially careful not to introduce any twist into the rope.

"That's this veteran contractor's method of obtaining exceptionally long rope life. I'm glad to pass it along to you."

ARE YOU GETTING THE MOST FROM YOUR WIRE ROPE?

The TIGER BRAND Specialist—an experienced field service engineer—draws on his own experience and that of veteran construction men like Charlie Dinardo to help you get the best performance from your wire rope at the lowest possible cost.

He'll be glad to talk over your problems with you and make suggestions. Meanwhile, write for our booklet "Valuable Facts About the Use and Care of Wire Rope." You'll find it helpful.



980 FEET LONG . . . 100 feet high at the lowest point in the valley . . . this three span concrete arch bridge carries the new Penn-Lincoln Parkway west toward the Squirrel Hill Tunnels in Pittsburgh, Pa. Dinardo, Inc., Pittsburgh, is the contractor.

98% OF THE CONCRETE in this job is being poured by cranes—equipped with Tiger Brand Wire Rope.

SEND FOR THIS BOOKLET

American Steel & Wire Company
Rockefeller Bldg., Dept. A-7
Cleveland 13, Ohio

Gentlemen:

Please send me a copy of your booklet, "Valuable Facts about the Use and Care of Wire Rope."

Name .....

Company .....

Position .....

Address .....

City ..... State .....

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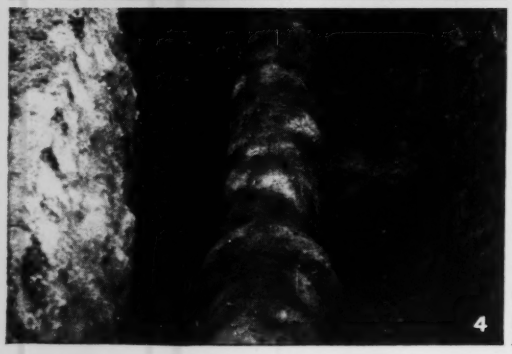
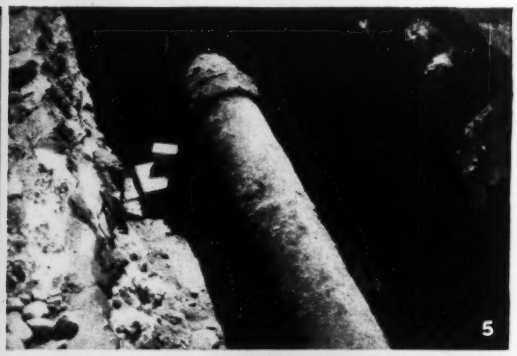
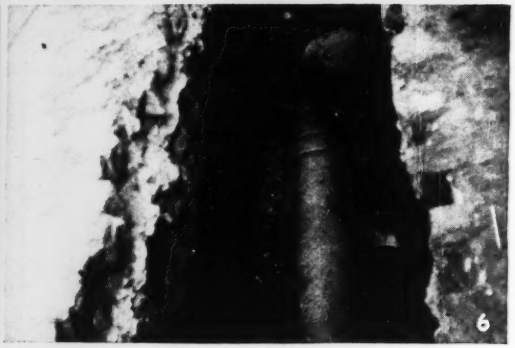
AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL







(1) This 101-year-old cast iron water main is serving Frederick, Maryland.

(2) Still in use after 118 years of service in the water supply system of St. Louis, Mo.

(3) This water main, installed 117 years ago, is still serving Richmond, Va.

(4) Lancaster, Pa. laid this cast iron water main 105 years ago. It is still serving.

(5) One of several cast iron water mains that have been serving New York City for more than a century.

(6) America's oldest cast iron water main, now in its 132nd year of service in Philadelphia.

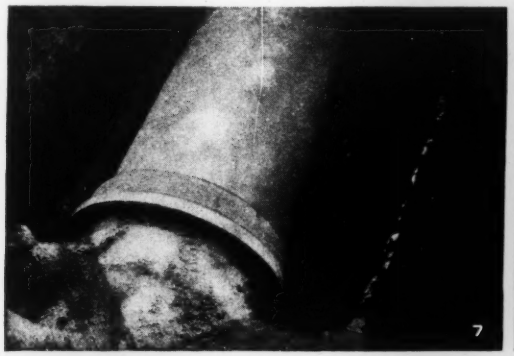
(7) This cast iron water main has been serving Boston for 120 years.

Going strong in their 2nd Century

About 30 of the older American cities have cast iron water or gas mains in service which were laid from 100 to 132 years ago. Most of these mains, on or after their 100th Anniversary, have been uncovered, inspected and photographed for the record. Seven of them—all water mains, are shown in this advertisement.

While it is well known that cast iron water mains in England, France and Germany have service records that approach three centuries, we, who make cast iron pipe, nevertheless get a thrill out of looking down into the trench at an uncovered section of a main that has been in service for 100 years—and so, we are told, do water works and gas engineers.

When one considers the radical changes which have occurred in a century in vehicular traffic, and the vast development of underground construction for the many utility services, the fact that these mains are now in their second century of service is all the more remarkable.



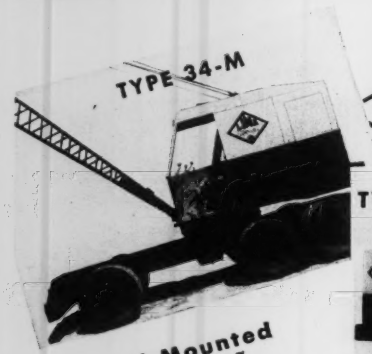
CAST IRON PIPE

SERVES FOR CENTURIES

Cast Iron Pipe Research Assn., T. F. Wolfe, Engr., Peoples Gas Bldg., Chicago 3.

Now you can get **LIMA**

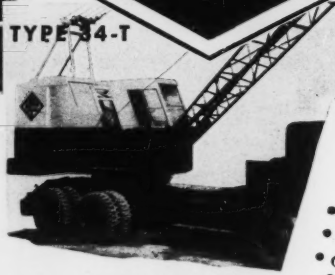
DEPENDABILITY and STAMINA plus the MOBILITY of Rubber Mounting



Wheel-Mounted
"Paymaster"

- Convertible Crane, Shovel, Dragline or Pull Shovel
- Powered by one engine
- One Operator Control—including travel
- Crane Capacity 20 tons (with outriggers)
- Shovel Capacity ¾ or 1 yard
- Travel Speed (maximum) 8.24 M.P.H.

3 TYPES



Truck-Mounted
"Paymaster"

- Convertible Crane, Shovel, Dragline or Pull Shovel
- Separate engine for travel
- Requires two operators
- Crane Capacity 20 tons (with outriggers)
- Shovel Capacity ¾ or 1 yard
- Travel Speed (maximum) 31 M.P.H.

Wheel-Mounted
Crane or Clamshell

- Powered by one engine
- One Operator Control, including travel
- Crane Capacity . . . 35 tons (with outriggers)
- Travel Speed (maximum) 5.27 M.P.H.

With these three rubber-mounted units you can now get all the other advantages of LIMA equipment—greater performance, less "down-time", longer life, etc.—*plus* the added benefits of greater mobility, less travel time, and better maneuverability. Rotating assemblies have the same basic features as corresponding crawler machines, with alterations adapting them to truck or wheel mounting. With outriggers supported, they provide extra capacity. They are ideal for operations requiring constant movement around the job, for small scattered jobs, or jobs remotely located.

THE LIMA LINE NOW INCLUDES:

Crawler-Mounted	*Rubber-Mounted*
Shovels, ¾ to 6 yds.	Shovels, ¾ and 1 yd.
Cranes, to 110 tons	Cranes, to 35 tons
Draglines, variable	Draglines, variable

It will pay you to consult your nearest LIMA Sales Office or Representative before you buy your next shovel, crane or dragline. Offices in principal U. S. cities.

Lima Shovel and Crane Division

LIMA, OHIO

OTHER DIVISIONS: *Lima Locomotive Works Division; Niles Tool Works Co.; Hooven, Owens, Rentschler Co.*

LIMA HAMILTON CORPORATION

NEWS BRIEFS

Big Road Business—Pennsylvania's Highway Department is pretty proud of its road building, improving and maintaining assignment—which covers 41,000 miles. That's 41 percent of the state's roads and streets. On a national average, PHD says, states build or maintain only 18 percent of the roads within their boundaries.

Welcome, Tourists—Florida expects to get started in January on a $36,000,000 program of super highway and bridge projects in Duval County. The object is to provide Jacksonville traffic with a through road system. Engineers are now planning three bridges.

Overloading to Cost More—Ohio has enacted a new law on truck weights which boosts overload penalties. Fines go up from $25 to $250, plus $1 per hundredweight overload. There's a 30-day jail sentence, too. Another new bill revises weight limits, without disturbing the 78,000 lb. gross limit. It permits 5 percent more weight for each foot between the front and rearmost axles; raises the single-axle load to 19,000 lb. and the tandem-

THE COVER PICTURE

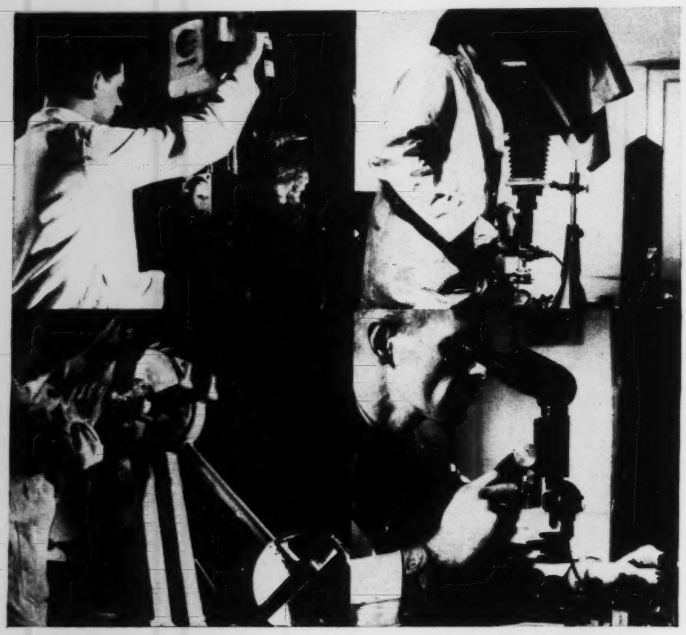
Offhand, it would seem a long way from building atom bombs to building housing—but it wasn't so for Maj Gen. Thomas F. Farrell (Ret.) who now heads the New York City Housing Authority.

Mild-mannered—but with a military record that belies that appearance—58-year-old Gen. Farrell is a native of Brunswick, N. Y., and a graduate in civil engineering of Rensselaer Polytechnic Institute. His first jobs after leaving school included work on New York State's Barge Canal and the Panama Canal (for private contractors) before he joined the Corps of Engineers as a second lieutenant in 1916.

He came out of World War I a major, and remained in the Army until 1926, serving on rivers and harbors projects and as an instructor at West Point.

He returned to his home state in 1926 to take the post of Commissioner of Canals and Waterways, and became chief engineer of the state's Department of Public Works in 1930—holding that post until recalled to active Army duty in 1941. In his six years of service thereafter, he rose from colonel to brigadier general while he was chief engineer of the China-Burma-India Theatre, and to major general after he was assigned as deputy to Maj. Gen. Leslie R. Groves, in the Manhattan District.

Since taking over as Chairman of the housing authority he has been a driving force in huge programs to clean out and rehabilitate New York's rundown housing areas (see also p. 46 this issue).



Raw material control means better Tube-Turn welding fittings

What's a piece of steel made of?

THE quality of a finished product is largely dependent on the quality of the raw material from which it is made. That's why Tube Turns' laboratory technicians thoroughly test every lot of seamless steel tubing received in the Tube Turns, Inc. plant.

Answers to that important question —*What's a piece of steel made of?*— are determined in two ways. First, by chemical tests that disclose the exact percentage of the various elements present in the steel. And, second, by physical tests to determine the steel's tensile strength, yield strength, and elongation. Unless the steel measures up in all respects, the entire lot is rejected.

At the end of these tests, not only is the chemical composition of the steel known, but an accurate appraisal of its metallurgical and physical characteristics has been made. And these facts are filed by the laboratory control number rolled into each fitting to identify it permanently with the lot of steel from which it was made.

This rigid control over raw material is your assurance of basic quality in the Tube-Turn welding fittings you buy. Modern equipment in the hands of skilled technicians permit only the best steel to be used for the manufacture of Tube-Turn products.

Remember, you can always bank on good service in good connections every time you specify "Tube-Turn."

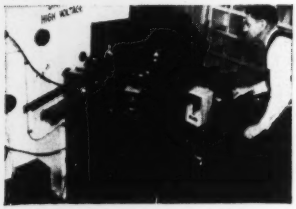
TUBE TURNS, INC.

230 East Broadway, Dept. I, Louisville 1, Kentucky

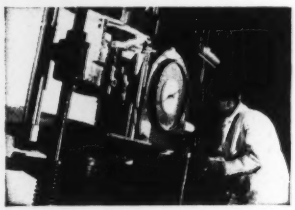
District Offices at New York, Philadelphia, Pittsburgh, Chicago, Houston, Tulsa, San Francisco, Los Angeles

TUBE-TURN

WELDING FITTINGS AND FLANGES

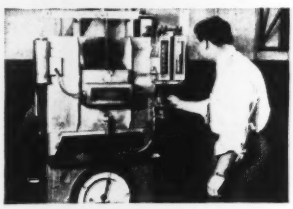


Foolproof chemical analysis of steel is made quickly and accurately on this Spectroscope, typical of the modern equipment used by Tube Turns, Inc. in the control of raw material.



Tensile strength of all seamless steel tubing is accurately measured on this machine, capable of exerting a force of 6,000 pounds. Yield strength and ductility are also checked here.

Periodic checks on the hardness of the steel are made with this Rockwell instrument to determine the strength, ductility, and machinability of the material. Brinell equipment is also used to check hardness.



Advance indication of what will happen to the steel during processing is determined with this electric furnace, one of a battery. Heat treatment to which the material will be subjected is duplicated here.

axle weight to 31,500 lb. Under the revised bridge weight code, weight is limited to 38,000 lb. plus 800 lb. per foot of vehicle between axles.

Interstate Bridge Cooperation—Oregon and Idaho Highway Departments have agreed on joint improvements of Snake River bridge crossings where the stream forms a boundary between the two states. New bridges are to be built at Weiser and Payette, Idaho, and existing bridges at Nyssa and Ontario, Ore., are to be widened. Idaho will make foundation tests and Oregon will design the Weiser bridge. Oregon will do both for the new Payette bridge. Contracts will be awarded jointly, with all costs shared equally.

Cathedral of Earning—Turner Construction Co., is to build a new downtown Pittsburgh office building for the Mellon interests and United States Steel. W. K. Harrison, M. Abramovitz and W. Y. Cocken, Associates, are architects for the 39-story rival to the University of Pittsburgh's Cathedral of Learning.

South Dakota Drops Clause—Bids have been affected favorably by the dropping of South Dakota's "de-escalator clause," State Engineer D. W. Loucks believes. The eliminated clause was applied to state institutional construction contracts. Two have been bid in recently below engineers' estimates.

Turnpike Extension Starts—Gannett Fleming Corddry and Carpenter, Inc., Harrisburg, Pa., engineers, have been retained by the Pennsylvania Turnpike Commission to design the $60,000,000 extension of the Pennsylvania Turnpike from Pittsburgh to Youngstown, O. Location of this 50-mi. road and cost estimates have been completed.

Name Columbia Bridge Site—Covington Point, 3 mi. upstream from The Dalles, Ore., has been recommended as the site for a proposed Columbia River toll bridge. The recommendation comes from Col. Ralph A. Tudor, who surveyed the matter for the Washington and Oregon highway commissions. The bridge, which would eliminate an existing ferry service at The Dalles, is estimated to cost $2,661,000.

Correction—California's East Bay Municipal Utility District serves Oakland, nearby municipalities and unincorporated areas in Alameda and Contra Costa Counties. It does not serve San Francisco, as was incorrectly reported in our July 14 issue.

CHOOSE "QUICK-WAYS" REG. U. S. PAT. OFF. FOR SURE PROFITS!

YOU CAN BUY A "QUICK-WAY" TRUCK CRANE for as low as $6,775.00 complete with chassis F.O.B. Factory Write for full details

Every "QUICK-WAY" part will deliver its capacity rating and more, and you get more utility out of a "QUICK-WAY" fully equipped, than any comparable equipment. Each "QUICK-WAY" is easily converted in minutes from shovel to crane, dragline, clamshell, pile driver, scoop, trench-hoe or backfiller. Buy just the attachments you want to do more jobs better.

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Capacity in a truck shovel is fundamental . . . but it isn't enough. Check your requirements against all the advantages "QUICK-WAY" offers

1 Convertible Units
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5 Accurate Balance
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12 Low Maintenance and Repair
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MODEL E 4 10 cu. yd. capacity mounts on any standard 5-ton truck
MODEL J 1 4 cu. yd. capacity mounts on any standard 1 1/2-ton truck

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Beech Aircraft Corporation
Wichita, Kansas, U.S.A.

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Let me give you an example of its usefulness. Recently I was fortunate to obtain a rental contract in Arizona. Somehow, bidding was not announced until the Friday before the Tuesday deadline. In that brief time the job had to be inspected, contracts obtained and a cash bid bond submitted. The two necessary round trips were made possible only by the Bonanza.

Besides helping me get business, the Bonanza is invaluable in making possible adequate job inspection over a wide area. And it has often "saved the day" by keeping equipment in action through the delivery of replacement parts.

Yours very truly,

Laurence Arpin

...a 4-place Beechcraft BONANZA

Construction men and engineers all over the country report they can do *more* profitable business when a company-owned Beechcraft Bonanza gives them complete mobility of action. Its 170-mph cruising speed allows key personnel to take on additional job supervision — no matter where these jobs are located. Beechcraft Bonanza versatility pays off, too, since it doubles as a rush equipment carrier. And because of its exceptional comfort, the Beechcraft Bonanza is a wonderful "selling tool" for customer entertainment. *Low* operating costs. Investigate!

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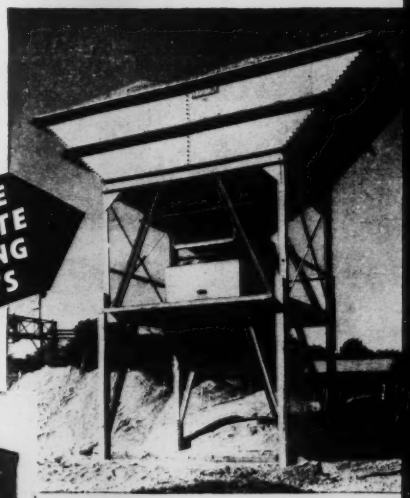
BLAW-KNOX

BATCHING PLANTS REALLY CUT CONCRETING COSTS



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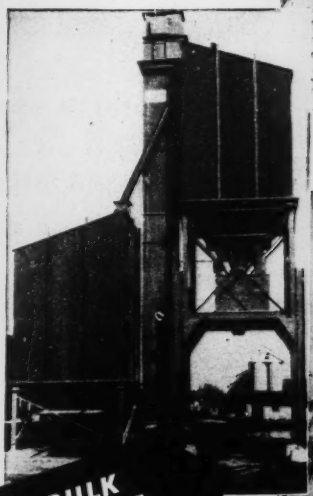
HERE'S a complete line of portable batching and mixing plants that will keep your fleet of trucks moving all the time. Big capacity for aggregates and cement means there's never any waiting for the crane to catch up or for spotting cement cars for unloading. Twin batchers, and choice of manual or automatic controls for Water Weighing Tanks, electrically operated discharge gates on bulk cement plants are only a few of the features that assure fast, accurate batching.

Capacities of aggregate plants range from 100 to 120 tons in two, three or four-compartment styles, bulk cement plants of 300 and 400 barrel sizes with combination arrangements to double these capacities.

The flexibility and portability of Blaw-Knox batching and mixing plants provide the solution to ready mixed concrete operations, central mixing plants or concrete products manufacturing problems. See your nearest Blaw-Knox distributor for details.



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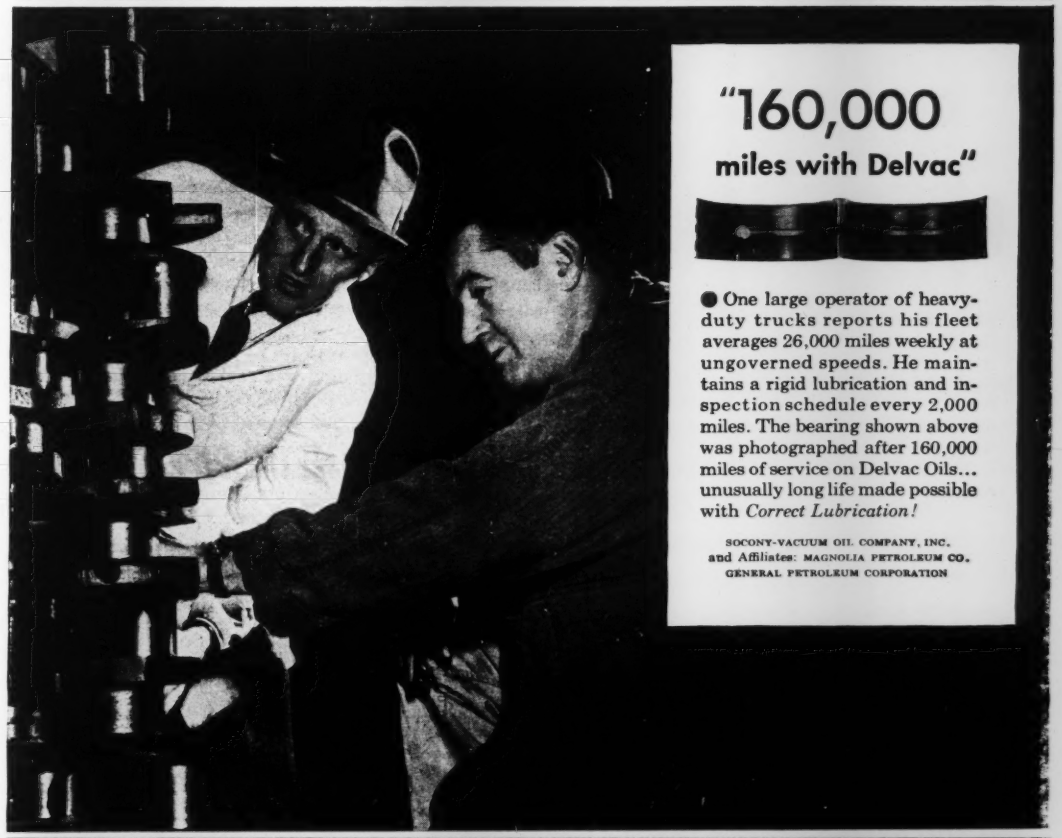
They're famous *heavy-duty* oils—give full engine protection throughout the entire operating temperature range... possess rich lubrication films that provide full piston ring seal, minimize blowby, reduce friction.

Delvac "900 Series" Oils combine exceptional oxidation resistance with special detergent properties to help keep engines clean. Contaminants remain in suspension, are easily removed by periodic crankcase draining. High resistance to chemical change protects hard alloy bearings against corrosion.

* * *

Get *correct lubrication!* Use Delvac Oils!

DOWN-TIME . . . BEAT CONTRACT DEADLINES!



"160,000 miles with Delvac"

● One large operator of heavy-duty trucks reports his fleet averages 26,000 miles weekly at ungoverned speeds. He maintains a rigid lubrication and inspection schedule every 2,000 miles. The bearing shown above was photographed after 160,000 miles of service on Delvac Oils... unusually long life made possible with *Correct Lubrication!*

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Contractors' Service

Keeps machines on the job...
Speeds work progress!

SOCONY-VACUUM

Can you afford to bid 33% higher?

No contractor wants to be in this position when "close figuring" is in order. That's one reason so many experienced contractors are using ARMCO Corrugated Metal Pipe on drainage jobs. They have found the cost of installing short, sectional pipe requires higher bids for adequate profits.

Figured on an installed basis ARMCO Pipe saves money in many ways. Flexible, corrugated metal design assures ample strength without excess weight. This means low handling and hauling costs. Job costs are low because unskilled labor quickly and easily makes the installation. There is no breakage, no curing, no waste, no delay.

Individual sections of standard ARMCO Corrugated Pipe and PIPE-ARCH are supplied in any length that can be hauled and handled. No large and expensive equipment is required for installation. A few men with a rope sling or a small A-frame can handle the largest structure. Connections are made with simple band couplers. Where end finishing is needed, prefabricated ARMCO End Sections are simple to install.

Use ARMCO Drainage Products on highways, railways, airports and wherever else you need economical, easy to install drainage structures. Write for complete data. Armco Drainage & Metal Products, Inc., 815 Curtis Street, Middletown, Ohio.

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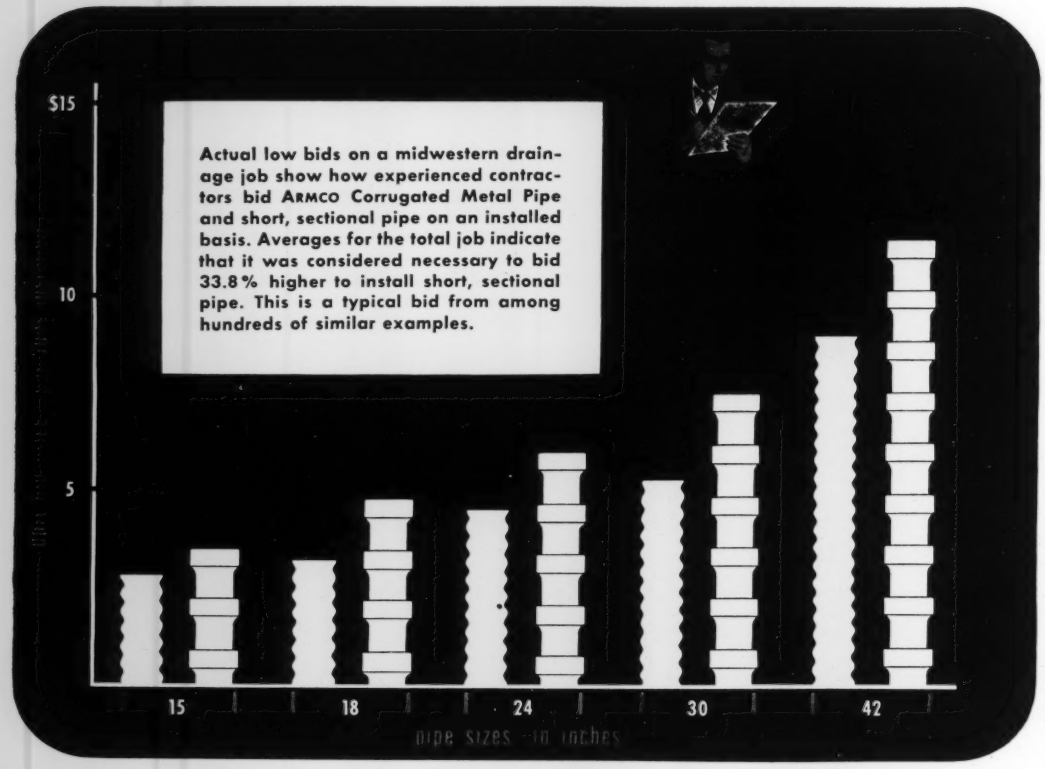
ARMCO CORRUGATED METAL PIPE


$15
10
5
Actual low bids on a midwestern drainage job show how experienced contractors bid ARMCO Corrugated Metal Pipe and short, sectional pipe on an installed basis. Averages for the total job indicate that it was considered necessary to bid 33.8% higher to install short, sectional pipe. This is a typical bid from among hundreds of similar examples.
15
18
24
30
42
pipe sizes in inches

THE CONSTRUCTION WEEK

SKIRMISH—For the moment, Washingtonians see President Truman's current call for "shot-in-the arm" federal spending as a gesture. Truman is responding to pleas from trouble-spots—particularly New England—but unless really large sums of money are made available, the actual help can be little more than a psychological trickle. For now, all White House Handyman John Steelman is expected to do is to urge federal agencies to funnel all the money they can into trouble spots. Just what can be done here is uncertain—you can't lift Army engineer appropriations for a dam, say, in Montana, and use them in New England.

HOME COSTS UP?—One organization that's taking a dim view of the new housing bill (ENR July 7, p. 49) is the National Association of Home Builders. Rodney Lockwood, association president, last week had predicted a 15 percent jump in costs—laying the blame on pyramiding $1.5 billion of slum clearance and $325 million for farm housing atop the $7 billion-odd that private builders have planned for the present year. Labor forces will be stretched too thin, demand for materials will go high, he said.

LARGEST FLUME DIVERSION?—Canyon Constructors, contractors for Canyon Ferry Dam, are considering use of what will probably be the largest river diversion flume in U. S. construction history. The decision is between a standard tunnel-type diversion and use of a 1,200-ft. long, 65-ft. wide, wooden flume. As designed by Hamilton and Williges, Oakland, Calif., civil engineers, the flume will involve 4-in. splined timber walls covered with a 1-in. thickness of waterproof membrane. The flume will carry flows of the Missouri River of as much as 21,000 cfs. on this USBR power and irrigation project located 17 miles from Helena, Mont.

PRIVATE POWER FOR COOPS—Two privately-owned utilities—Georgia Power Co. and Georgia Power and Light Co.—have signed a five-year contract to supply energy at wholesale to five federally-financed electric cooperatives and five municipal power systems in Georgia. The wholesale energy rates will be sufficiently low to enable the ten distribution systems to make substantial reductions in retail service rates.

NEW HOUSING MACHINERY—The President's recent request for $33,650,000 to carry out federal housing functions during fiscal year 1950 included more than $8,000,000 for expansion of the Public Housing Administration, and its parent, Housing and Home Finance Agency. PHA would get enough to add 1,450 employees ($4,750,000) and HHFA would get $3,600,000—for work in two new divisions, slum clearance and research. Among the things prompting the increases in personnel and activities are provisions in the new housing bill (ENR July 21, p. 25) that would extend until March 21 Section 608 of the existing National Housing Act. These provisions guarantee loans going into private rental housing and have covered the bulk of all rental housing built since the war.

PRA IS BPR AGAIN—The Public Roads Administration is once again the Bureau of Public Roads—the name it had before Roosevelt moved it from the Agriculture Department to the Federal Works Agency. The change in name is definite—more so than the bureau's status. Congress has moved it to the new General Services Administration, Jess Larson's newly formed replacement for the FWA. Meantime, President Truman's reorganization scheme would put the bureau in the Commerce Department. It will move next month unless the President's plan meets congressional disapproval.

HIGH COST FOR STREET HEAT—New York City's plans for installing heating pipes under major intersections of 42nd street to dispose of snow got a major chill last week, when bids were opened. The city's Department of Sanitation had figured the installations (to be done during a current repaving program) would cost about $74,000. Lowest bid was $147,900.

LONG SUMMER FOR CONGRESS—You can expect Congress to keep going at least another three weeks—more likely through most of August. It's not only Truman's reorganization plans that will keep them; it's the work schedule congressional leaders have laid out to be done before quitting. Senate debate on the Atlantic Pact will be followed by reciprocal trade extension and several of the major money bills still to clear; also action on the "Economy Resolution." The House schedule includes the Senate-approved military reorganization bill and aid to education. Both houses have yet to act on minimum wage and farm legislation of some sort—two musts on the legislative list. But barring any real economic emergency, the congressmen who go home late in August will count on staying there until January.

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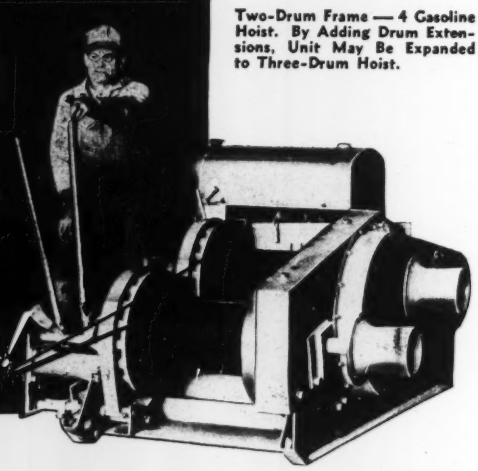
Lower your Costs
Hoist your Profits!



Two-Drum Frame — 4 Gasoline Hoist. By Adding Drum Extensions, Unit May Be Expanded to Three-Drum Hoist.

ENGINEERED FOR LONG-LIFE DEPENDABILITY

The smoother, easier operation of Clyde Hoists assures **faster, more careful** material handling on construction jobs.

Clyde "quality-plus" Frame-4 Hoists are engineered for maximum efficiency and long-life performance that is unexcelled! All shafts are of high carbon steel and turn on ball bearings. All steel, electric welded frame is of exceptional strength and rigidity but free of unnecessary bulk and weight. And here is another "plus" value that owners and operators appreciate: — at those infrequent intervals when a Clyde Hoist requires maintenance, the easy accessibility and simplified servicing saves time and encourages the operator to keep the hoist in top operating condition.

Whether your requirements call for a one, two or three drum hoist powered by gasoline, electric or diesel unit, it will pay **you** to investigate the complete line of Clyde "quality-plus" Frame-4 Hoists.

OUTSTANDING FEATURES

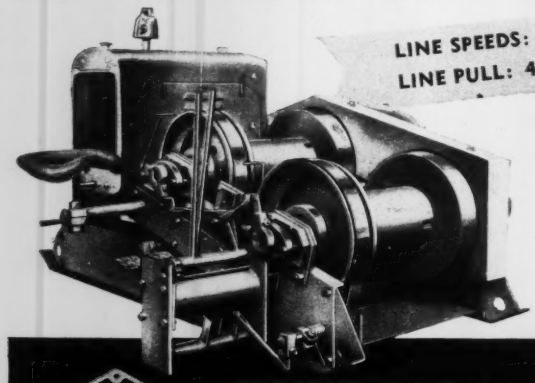
THRUSTS AND FRICTIONS:
Thrusts are full ball bearing screw and yoke type, easily engaged and released. Efficient, simplified cone frictions require minimum care and adjustments.

RATCHETS:
Rugged, positive action rachets are cast on drums. Pawls are visible to the operator for greater safety.

DRIVE:
Chain drive operates in oil bath. Chain adjustments are easily made by means of a new type tightening mechanism. All shafts turn on ball bearings..

DRUMS:
Barrel diameters are of most practical size for the utmost rope economy. Drums are one piece with self-oiling bushings.

POWER:
Choice of gasoline, electric or Diesel.



LINE SPEEDS: 178 to 332 feet per minute

LINE PULL: 4,000 to 5,500 pounds

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CONSTRUCTION TRENDS

Construction Costs at Low Point?

Construction costs may have reached their current lows and be leveling off, with some minor ups and downs ahead. A comparison of the standing of major indexes (ENR July 21, p. 30) shows that some of them have turned upward slightly. ENGINEERING NEWS-RECORD's own construction cost index has climbed from a low of 472.1 in May to 477.5 in July.

Wage increases in the construction trades are chiefly responsible for checking the decline in the ENR index. By now, however, most 1949 labor agreements in the industry have been settled and are reflected in the index. The course of the index through the rest of the year will depend largely on what happens to prices of materials.

Indexes based directly on contractors' costs—and reflecting cost reductions from better productivity—may continue to go downward. They have dropped more than the indexes similar to ENR's that are based on wage rates and materials prices with no allowances for efficiency on the job. The Turner Index, for example, has dropped about 5 percent. But even the contractor indexes in most cases do not fully reflect the drop in contract prices. A smoother flow of materials and improved productivity on the job have made it possible for contractors to cut their bids from 4 percent to as much as 28 percent.

In short, the indexes may not yet reflect the sharp decline in contractors' bids. But both bids and wage and material costs may be leveling off. The outlook is for some minor bumping up and down in the next few months, but no major changes.

1948 Record Now in Reach

Homebuilding now is within striking distance of the 1948 record. BLS estimates June starts hit 100,000—topping 1948 for the first month this year. But BLS has revised estimates for February and March upward—which makes total starts for 1949 to date only about 27,000 behind the first six months of 1948. Last year, too, homebuilders hit their peak early and starts declined each month after May. Given a "normal" pattern of starts through the rest of the summer, homebuilders might top, and certainly will come close to, last year's record total of 931,300 homes started.

Housing Market Looks Strong

Apparently, there are buyers for a million new homes, or more, this year. The 1949 Survey of Consumer Finances, published by the Federal Reserve Board, estimates that well over one million families are planning to buy newly built houses. The Board's report is based on a national survey of family incomes, savings, and plans to buy homes, automobiles, and major appliances. It shows that families are in a relatively strong financial position and that, on the whole, they plan to buy as much or more than they did in 1948.

Highlights of the survey's findings on housing: About 2.4 million families bought houses last year, compared with 2.2 million in 1947. They spent in all about $21 billion—$6 billion more than in '47. About 800,000 families bought new homes to occupy—which checks with estimates of new houses completed, after allowing for the number waiting to be sold at year's end, and for rental units. Average price was between $7,500 and $8,500.

Family plans this year show some shift to lower-cost houses. Roughly half of all prospective buyers, about 600,000 families, plan to pay less than $7,000. Survey indicates there will be a market for more moderately priced houses than are likely to be built.

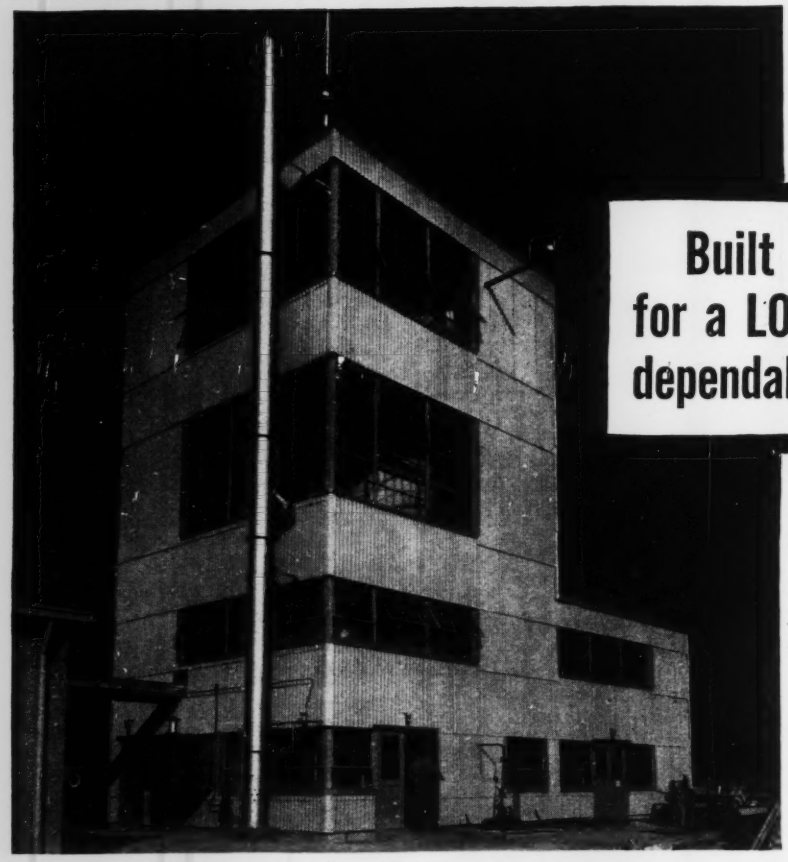
Heavy Works Spending in Sight

Clues to the trend on public works were given in the President's mid-year economic message. Federal expenditures will be at a rate of about $3 billion in fiscal 1950, which is only just beginning. Even without any new starts, continuing the programs in the '50 budget will require spending about $3 billion in each of the two following fiscal years, 1951 and '52. Local and state expenditures, the President estimates, will be at a rate of more than $3 billion in each of those years. In short: there is at least $6 billion in public works in sight for each of the next three fiscal years.

Investment at High Level

Industry will spend almost as much for new plants and equipment in the third quarter of 1949 as it did in the second quarter—the Department of Commerce and Securities Exchange Commission report. A survey by the two agencies shows capital expenditures will be off about 4 percent in July, August and September. Apparently, however, business, except for the public utilities, is putting more stress on new equipment and less on new building. ENR's reports on contract awards show industrial building as a whole is running slightly behind a year ago, but utility construction is running well ahead of last year. It is too early to estimate fourth quarter capital expenditures, but the slight downward trend is expected to continue.

• *New pilot plant of Pittsburgh Consolidation Coal Company at Library, Pa., sided with "Century" Asbestos Corrugated. Construction by Chemical Plants Division of Blaw-Knox Company, Contractors.*



Built for a LONG life of dependable service

K&M "Century" ASBESTOS CORRUGATED

Nature made Asbestos... Keasbey & Mattison has made it serve mankind since 1873

K&M best in asbestos ®

This large pilot plant of the Pittsburgh Consolidation Coal Company is the latest unit in one of the most modern research laboratories of its kind. The new building is designed and equipped for the study and development of more efficient coal gasification processes.

It is fitting that the fine equipment of this pilot plant should be housed in a modern building sided with good-looking, long-lasting K&M "Century" Asbestos Corrugated. This time-proved material is noted for great structural strength and ability to withstand severe commercial usage. It resists fire, weather, rot, rust and galvanic action. And no protective painting or upkeep is needed.

"Century" Asbestos Corrugated is easy to cut with a portable electric or band saw . . . easy to drill . . . easy and *fast* to apply, for it comes in 24 different sheet lengths. Can be re-used even after many years of service.

Write for name of nearest distributor and further particulars. Your inquiry will receive prompt attention.

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The CVA Again

THE NORTHWEST may yet find itself operating under the benign influence of a Columbia Valley Authority. Secretary of the Interior Krug, testifying before the Public Works Committee of the House of Representatives recently urged that such an over-all agency be set up to coordinate development of the water and power resources of the entire basin as a unit instead of having the work shared as at present by the Bureau of Reclamation, Corps of Engineers, and Bonneville Power Administration. The present arrangement, Mr. Krug said, results in waste of the taxpayer's money and duplication of effort and conflict between the three agencies.

Possibly there is some conflict under the present set up, but conflict does not appear to be inherent in the existing system. If there is a real desire for cooperation within each agency, and if each makes a sincere effort to cooperate with the others, there need be neither conflict nor waste. Consequently, Mr. Krug's statement stands as an indictment of the three agencies, one of which is under his immediate control.

Just how a Columbia Valley Authority would eliminate all duplication is not apparent. If it took over all the work the three agencies are doing in the Columbia River basin it would have to go into irrigation work extensively, and presumably would set up an irrigation division that soon would be duplicating work now done well by the Bureau of Reclamation. Similarly, there is river work, dredging, and channel maintenance in the lower river, now done efficiently by the Army Engineers, that would have to be taken over, which hardly could be handled as well by a new agency divorced from similar river work elsewhere in the country.

If there is conflict and waste in handling the development of the water resources of the Columbia, the way to avoid them is to emulate the plan of inter-agency cooperation that is working satisfactorily in the Missouri River Basin. Creation of a new super agency not directly responsible to Congress or to the several states of the Northwest does not appear necessary.

Workers Brought In By Air

CONTRACTORS on government projects in the Pacific Islands have found it profitable to bring men to their jobs by air transport (ENR July 14, p. 24). New employees can start work three or four days after they are hired—instead of three or four weeks. The savings in pay and travel expenses far offset the extra cost of air transport, and the morale building value of the plan is high. There is no tedious waiting at Pacific ports for a ship. Similarly, unprecendented amounts of freight are being delivered to remote Pacific areas by the same means.

This use of air transport for the movement of men and machines is not new. What gives it special interest in this Pacific work is the large number of men carried and the fact that it is an established routine rather than an emergency measure. Only in the mining regions of northern Canada has there been any parallel operation.

This development also raises question as to whether construction contractors are making full use of available air-transport facilities for less spectacular short-distance movements of men and materials. Only days—instead of weeks—would be gained, but the savings should be appreciable. Also, in the case of men, there should be a morale building value in taking men to a job by airplane. Some of the big industrial companies are capitalizing on this when recruiting new engineers from among the graduate students in engineering schools. The students are told to fly to plants at considerable distance from their schools, with all expenses paid. To the man who is needed badly enough to be flown in to a construction job, his part in that job should take on a new significance.

Railroad Terminal Reconstruction

REPLACEMENT of the old freight and passenger terminal of the Missouri, Kansas & Texas Ry. in Houston with a large modern warehouse and office building, as is now proposed (ENR June 16, p. 23) points to a possibility for profitable reconstruction that can be found in most cities. The freight yards in nearly every city were built back in the days of horse-drawn drays, which made it imperative that the tracks be close to the city's commercial center. That limitation now has no significance. Also, most of the track layouts and structures built at that time are obsolete and inefficient for the large trucks of today. Construction of new freight yards outside the city where land is available for an efficient layout, as is proposed at Houston, opens the way for economies in handling shipments to and from the city and releases most or all of the down-town area for other purposes. In Houston the area is to be used for an enormous warehouse with direct rail connections. New passenger facilities are to be built into the lower part of an office building that is proposed for an adjoining site.

Many railroad managements recognize that they have obsolete freight and passenger terminal facilities, but lack the financial resources to make the needed changes. At Houston the work is to be done by the Katy Park Industrial Development Corp., which has been organized by local buisness men. The possibilities of such an arrangement for indepedent financing could well be explored in other cities.

An 80 foot clear span

with light, tremendously strong Truscon Clerespan Steel Joists

An 80-foot Truscon Clerespan Steel Joist (inverted for convenience in handling) being moved into position on the new Star Market building in Newtonville, Massachusetts.

Above and below: Interior view of the Star Market. H. L. Feer & Wm. E. Nast of Boston, Architects. Mark Linenthal, Boston, Mass., Engineer. W. H. Porter Co., Watertown, Gen. Contractor.

Next time you're working on a job that involves big areas of open floor space remember Truscon Clerespan Steel Joists—the joists that can stretch 80 feet without "over-reaching" themselves!

A recent application of these remarkably rugged joists was made at Newtonville, Massachusetts. The Star Market Company needed a large, pillar-free area for its sales floor; Architects H. L. Feer & William E. Nast, together with engineer, Mark Linenthal, came up with the simple solution—Truscon Clerespan Steel Joists.

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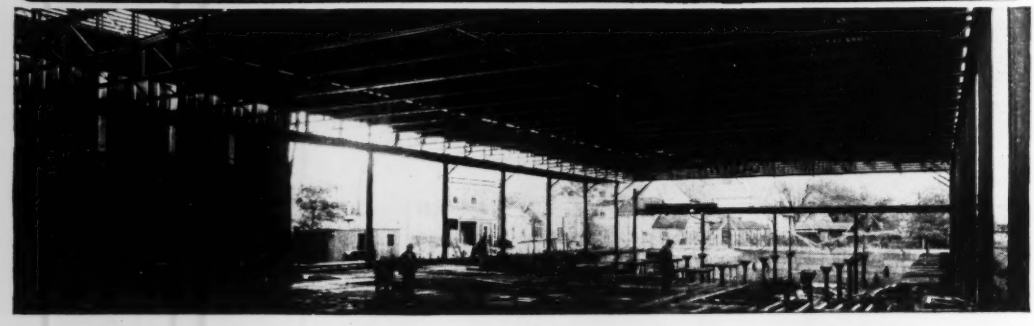


ENGINEERING NEWS-RECORD

JULY 28, 1949 VOL. 143 NO. 4

Industrial building rate seen holding to high levels

Designers report work on their drawing boards keeps good pace with 1948 record—see cost cuts through good design —look to increased labor efficiency to spur work

By E. E. Halmos Jr.

The industrial building side of the construction industry is holding its own despite a current slide-off in general business—somewhat to the surprise of the men who design the structures.

A majority of seventy structural engineers and architects told ENGINEERING NEWS-RECORD field correspondents in 12 major cities last week that although industrial construction has dropped under 1948's record highs, there is still plenty of work on the drawing boards, and more to come.

The variance of work at hand was great at the extremes—from one firm in Chicago which reported only 10 percent of 1948 business now at hand to one in Los Angeles with 1,000 percent of 1948 work now on hand. But the general average of work on hand—compared percentagewise to 1948—appeared to settle at between 75 and 100 percent.

Since the amount of work now on the drafting boards is a measure of future work for contractors, it was apparent from the survey that some general slowdown in industrial construction is to be expected in the next year or two. The areas of greatest optimism on the part of designers were sharply defined as the Southwest, Rocky Mountain area and the Far West. Least optimism, and greatest drop in business, was shown in the northeast and north-central areas.

No great drop foreseen

Most of those interviewed looked for little change in the situation. Many are prepared for some slight further drop in volume as general business conditions level themselves out, but very few saw any prospect of any great drop under current levels in the next few years.

Carried out by personal interviews in Boston, Chicago, Detroit, Kansas City, Houston, New York, Los Angeles, San Francisco, Salt Lake City, Austin, Cleveland and Seattle, the survey developed one major theme:

The current general drop in industrial construction stems from the belief of prospective owners that construction costs will drop appreciably in the near future.

Almost unanimously, the architects and engineers agreed that this belief is optimistic.

They agreed that the way to get more work going is to bring costs down—but felt that the answer could not lie in the direction of declining costs of materials and labor. "The buyer is getting more for his construction dollar today," commented a Salt Lake City architect, "but he's getting it through better efficiency, better design, better labor productivity—not through drops in general materials costs."

"Eliminating extravagance and negligence in bidding, and paying more attention to efficiency will reduce prices," added an Austin consulting engineer.

Other reasons for drop

Other reasons for any slide-off in work ranged widely—from results of the last national election to difficulty of obtaining financing for new construction.

Most of the group, however, laid major responsibility for high prices at labor's door. Comment after comment stressed continuing demands for higher wages, continuing refusal to "do a day's work for a day's money", and union restrictions that hamstring efficient operation.

One Boston consulting engineer strongly urged that the U. S. government avoid committments to "economically unwarranted projects like Passamaquoddy", and "unduly costly hydroelectric projects" that enter into competition with privately operated utilities. "This sort of project," he said, "absorbs taxpayers' resources and curtails the flow of risk capital into private enterprise."

Most of those interviewed expressed themselves as "surprised" at the con-

FOR STEEL PRODUCTION—Part of $35,000,000 expansion program, this new hot strip mill at the Kaiser Fontana plant will be 90 x 1,075 ft., will have steel siding and roof, one 75-ton overhead crane and two of 25-ton capacity. Four 4-high finishing stands will turn out 2,000 tons per day of light sheet up to 80 in. wide. Also under construction adjacent to this project are motor room and roll shops which will add 19,500 sq. ft. of facilities.

timing volume of industrial construction.

Surprisingly, too, many of the interviewees reported that they had received considerable amounts of new work since January of this year—after a dull last quarter in 1948.

None of the group checked would venture a definite statement as to how much of the work they are now doing is coming off the "proposed" shelf and being replaced by other projects for construction in the still-distant future. But many felt that there was no need for worry about this phase.

"We must remember that by the time a lot of this work is done," said one, "there will be more that needs to be done, as industry strives to keep itself even with its competition and its markets."

S. F. bridge design funds tied up pending studies

When the California legislature adjourned early this month, an $893,000 item, meant for financing engineering design of the "twin" bridge across San Francisco Bay, was well mired by an amendment to the budget.

The legislature voted that none of the fund was to be available for its primary purpose until a full study of the Dolwig committee's recommendation for a second bay crossing had been completed (ENR June 5, p. 55).

As a result, Gov. Earl Warren ordered the Division of Bay Toll Crossings to comply. The division, originally set up as part of the state Department of Public Works to study the twin span and the Army-Navy board's tube-and-trestle "southern crossing," is now busy adjusting its original figures, and surveying the possibilities of removing streetcar tracks from the second deck of the present bay bridge and adding four traffic lanes cantilevered outside.

Part of the original purpose of the Dolwig committee was the study of tideland reclamation, but its fund of $25,000 was spent on bay crossing work. Hence the legislature has approved $45,000 more to finance the tideland investigation. In a 150-page report the committee specifically recommends that the Reber plan be given full consideration (ENR July 11, 1946, p. 56).

In announcing the Dolwig recommendation study, Governor Warren said that on its completion a public hearing will be held. The Toll Bridge Authority will then announce its final decision.

HOW IT'S DONE—Wisconsin architects and engineers watch a bill tightening registration standards become law as Gov. Oscar Rennebohm signs the measure. First row, left to right, are E. J. Kallevang, chief engineer, Wisconsin Power & Light; A. J. Strang, director, Wisconsin Architects' Association; Gov. Rennebohm; S. S. Cohen, consulting engineer; and W. W. Warczyn, assistant engineer, Mead and Hunt. Rear row, left to right: George Martin, chief engineer, Green Bay Metropolitan Sewerage Commission; M. O. Withey, dean of Engineering, University of Wisconsin; Herbert Moore, consulting engineer; and Harold Trester, engineer, Fluor Bros. Construction Co.

Wisconsin tightens law on professional engineers

Registration standards for architects and professional engineers in Wisconsin have been raised by the enactment of new legislation which became law July 18.

The new provisions went onto the statute books after two years of effort by the Wisconsin Society of Professional Engineers. Its committee handling the proposed legislation was headed, at different times, by Hans Dahlstrand, Allis-Chalmers director of engineering, and M. A. Blakey, Milwaukee consulting engineer.

WSPE's proposals were enacted by votes in excess of 2 to 1 in each chamber of the Wisconsin legislature, despite charges by opponents that they were merely devices to make registration more difficult for aspirants to professional ranks. Dean M. O. Withey, of the University of Wisconsin's College of Engineering and ex-officio chairman of the Wisconsin Registration Board of Architects and Professional Engineers, testified for the measure, along with about 50 other engineers and architects.

The new law makes these provisions:

1. Clarifies the Board's right to ask injunctive relief for violation of the registration act.

2. Creates an "engineer-in-training" classification for engineering graduates who have met all registration requirements short of the experience qualification.

3. Increases from five to seven years the experience required of an architect who has not graduated from a professional school.

4. Gives certain credit toward the architectural experience qualification which is not now allowed.

5. Raises from three to four years the experience required of an engineering school graduate, and from seven to eight years the experience required of a non-engineering school graduate. It also doubles the allowance for engineering school work short of graduation.

6. Requires a written examination of every candidate for registration as an architect or engineer after Jan. 1, 1952, with one minor exception.

8. Permits, rather than requires, the Board to extend registration by reciprocity to professional engineers of other states.

9. Doubles application and renewal fees for registration, to permit the Board to be self-sustaining.

Black & Veatch to keep name, policies, personnel

N. T. Veatch, partner in the Kansas City engineering firm of Black & Veatch, told ENGINEERING NEWS-RECORD last week that the policies of the firm, established over 40 years, will be unchanged by the death, July 4, of Ernest B. Black, senior partner in the firm and one-time president of the American Society of Civil Engineers (ENR July 14, p. 24).

The firm name will continue as it has been until now and there will be no personnel changes, Veatch declared.

N. C. pushes purchase of $5 million road machinery; assures private work

State highway commission reports no grounds for fear of state competition as plans are detailed for $200 million road work

After a series of statements from state officials intended to quiet the fears of contractors who foresaw increasing state competition in highway construction and maintenance, the North Carolina State Highway Commission last week went ahead with its plans to buy $5,000,000 worth of new roadbuilding machinery.

Funds for the purchase of the equipment will come out of a recent $200 million bond issue authorized by voters late in May (ENR June 9, p. 56) to finance a huge rural road improvement program.

The state plans to rent the new equipment to counties for use in the road program.

Contractors protest

Announcement June 30 of the state's intention to purchase new equipment brought an immediate expression of concern from one group of state contractors. Robert Patten, executive secretary of the Carolinas Branch, Associated General Contractors, expressed concern over the move, and requested that the state "utilize to the fullest" the "proven contract method of construction." Mr. Patten's letter to the highway commission was accompanied by the statement that Carolinas contractors would have the labor and equipment necessary to fulfill contracts on the state's road program. (A survey conducted by the AGC branch indicated that its members have equipment valued at $21,500,000, of which two-thirds will be available for highway work on August 15.)

The Carolinas Road Builders Association did not join in the "expression of concern." Warren J. Mann, executive secretary of the latter group, said his organization had received assurances from Gov. Kerr Scott that the state would carry on "the same percentage of work as before, as long as the contractors give the state a fair price."

Purchase of the new equipment by the state did not appear last week to be a real threat to the state policy of contract road building. Dr. Henry W. Jordan, chairman of the highway commission, said at Raleigh that for the most part, the equipment will be used for maintenance and stabilization work.

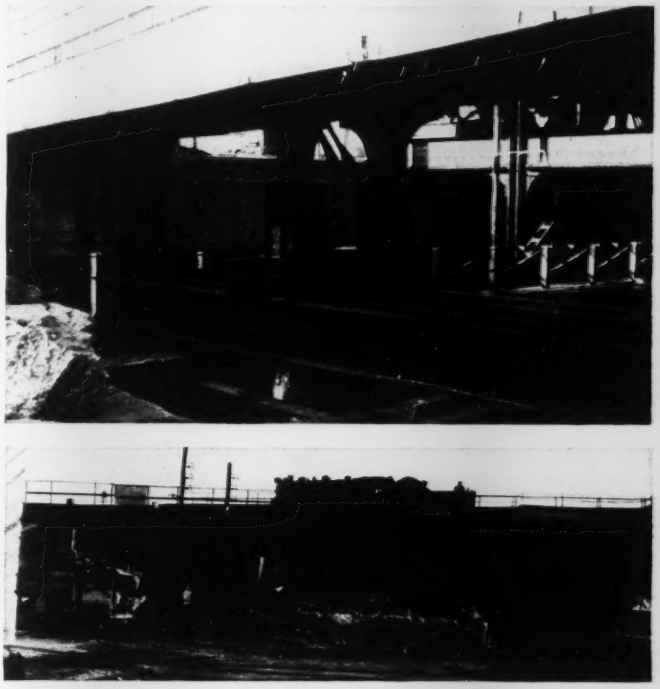
A considerable portion of it will be used to replace worn out machines now operating.

Armed with a ruling from the state attorney general's office that it can use a portion of the bond issue for equipment purchase, the commission is now planning to purchase $4,000,000 worth of mixers, graders, scrapers and tractors, and $1,000,000 worth of trucks.

Meanwhile, state highway department officials went ahead full speed to get their program—to cover improvement of more than 32,000 miles of rural roads—under way before the end of the summer. Needs of each highway division are now under survey as a preliminary to setting up a priority system.

The first $50,000,000 of the bond money will be used as soon as possible to get the program under way, but indications are that the entire schedule will not pick up real steam until early next spring.

Carolina railroads gave an additional boost to the plan by announcing they would cut cost per net ton of hauling sand and other roadbuilding materials —to make an estimated saving of more than $375,000 a year to the state, based on normal shipments.



RAILROAD GOES UP AND OVER NEW YORK SUPERHIGHWAY

Complexities of construction in an already highly-developed metropolitan area are illustrated by these two pictures of the lengthening of a Long Island Rail Road bridge and deepening the roadway under it. Thirteen tracks are supported on cribs and stringers, in the lower picture, while sheeted trenches are driven beneath for the construction of a new abutment (left hand trench) and a new bent of columns. In the upper picture, two railroad bridge columns are being underpinned as a unit. The project, at Jamaica, N. Y., involves a 95-ft. lengthening of the railroad bridge and a lowering of the grade under it for the new Van Wyck Expressway, which will provide direct access from Manhattan to Idlewild Airport. Work must be done so as to permit the LIRR to move 1,067 trains daily over the bridge. Arthur A. Johnson Corp. and Mason and Hanger Co., Inc., are the contractors. (Photos by Alfred Maevis, project engineer for the contractor.)

How new housing act will help cities

By Vincent B. Smith

The National Housing Act of 1949 (with its $1 billion in loans and $500 million in grants) clears two avenues for the cities to use in their redevelopment work.

For slum clearance, it removes the obstacles of big capital outlays and high write-down costs by authorizing (1) federal loans for buying a slum area, clearing it, and preparing the site for other use; and (2) federal grants to pay up two-thirds of the net cost incurred.

For rehousing the dispossessed, it provides financial assistance to localities for public housing in which priority must be given to eligible low-income families displaced by slum clearance projects. In fact, the law requires cities that apply for slum-clearance loans and grants to prepare solid plans for temporary homes, where needed, and permanent relocation in decent quarters of people displaced by clearing operations.

Further, the five-year program offers loans to acquire open land that will be developed for purposes primarily residential. This aid can open up space for construction of new housing to take care of people who have to leave slum clearance sites.

Federal financial aid under Title I is available only to acquire, clear and prepare the land. Loans and grants under this title cannot be used to rebuild an area. But, for projects on open or predominantly open land, the Housing and Home Finance Agency—administrator of the slum clearance provisions—can make loans to municipalities and public bodies for schools and other public facilities necessary to support the new uses of the land.

Actual reconstruction of an area must be undertaken by private or public interests—a corporation or a public housing authority would be examples—that buy the property to develop it in accordance with the new uses planned for it. The price charged for the land would be low enough to permit its economical development for such purposes.

For federal loan and grant assistance, a redevelopment project must conform to a general local plan. The law requires such planning to insure orderly community growth, prevent the recurrence of slums and protect property values.

Present information indicates that 27 states have some type of specific legislation that enables local communities to undertake slum clearance and urban redevelopment projects. Existing laws in some of the other 21 states may confer all or part of the necessary authority on municipalities to participate in the Title I program.

A hypothetical case

To help public officials and citizens—including engineers and architects—get an idea of how a slum clearance and redevelopment program would work, HHFA last week offered a hypothetical example. All local names and cost figures are purely fictional, it emphasized.

Suppose Central City wants to get rid of a slum area but cannot finance the job without federal help. The New National Housing Act states that loans and grants can be made to a local public agency that is authorized to carry on slum clearance work—it may be a public housing authority, a special redevelopment agency, or a department of the city government.

Central City chooses to create a redevelopment agency as authorized by the urban redevelopment laws of its state. Further, the city meets other requirements of the law: (1) It has a general plan for the development of the city as a whole; (2) it has use, health and sanitary codes for preventing further growth of slums; and (3) it has modernized its building code to encourage reduction of housing costs.

What the city's redevelopment agency needs first is a $20,000 advance to survey its slum area and prepare a specific project. Assuming that its application gets federal approval, the agency receives the $20,000, to be repaid when a project is approved and aided by federal loans and grants.

Some months later the agency is ready for a temporary loan to carry out a specific project. It now can show how much money it needs to undertake the project, including a complete breakdown of costs and anticipated returns. It has definite plans both for the work to be done in the project and for its future development; it has official city approval of the program; and it has a plan for rehousing families that will be displaced by clearance operations.

In addition, Central City has agreed to contribute about $350,000 in donations of land, services, (such as demolition work), site improvements (streets and utilities), and other public works that will serve the project—schools, playgrounds and similar construction.

The agency estimates that the project will call for $1,650,000—in addition to the $350,000 in local contributions—to acquire, clear, and prepare the area for redevelopment. Its application is approved by the federal government, and the agency enters into a contract to receive a federal loan to finance the project expenditures it will make, plus a commitment for a federal grant to meet up up to two-thirds of the loss the agency will incur when the cleared land is sold or leased for redevelopment.

The division of costs

The slum area is bought, cleared, and readied for redevelopment by the agency. The gross cost, including the $20,000 advance for planning, the $350,000 contributed by Central City in land, services and improvements, and the $1,650,000 spent by the redevelopment agency, totals $2,020,000. The land in the area is sold for $820,000, leaving the project $1,200,000 in the red.

Towards this loss the city can count on $800,000 from the federal government in the form of capital grants. The $400,000 balance must be made

TENANTS WILL BE IN these Alfred E. Smith homes before the end of the year. Twelve 16 and 17-story buildings ultimately will house 1,940 families on New York's lower East Side. Total cost: $28,000,000.

up by Central City. However, the $350,000 that Central City has already contributed in land, services, and improvements for the project is applied against the balance, and the city pays $50,000 in cash.

If the agency had decided to lease rather than sell certain portions of the cleared land in the project, it could have refinanced the leased portions at their reuse value with a federal loan that could run as long as 40 years, bearing interest at the going federal rate. The amount of this loan would have appeared in the proceeds just as though the land had been sold.

Commission sees Seattle polluting Puget Sound

Difference of opinion between the City of Seattle and Washington state officials over alleged pollution of Puget Sound by the city's sewage has been sharpened by several recent actions.

First, Prof. R. O. Sylvester of the University of Washington's civil engineering department, making a survey for the State Pollution Control Commission, found dangerous contamination by sewage of all Sound and Elliott Bay beaches. Samples taken at intervals along the shore line contained "sewage solids"; and "about a hundred sewer outfalls" discharge into the Sound in the area under survey—mostly within the city—he said. Some of these sewers discharge onto the beaches at high tide, Prof. Sylvester found, the tidal pressure being greater than that within the sewer.

The state health department meanwhile warned against the digging of clams along Sound beaches and found evidences of serious pollution on Lake Washington from suburban communities near Seattle.

In another action, the State Pollution Control Commission urged the city to take immediate steps to separate sanitary and storm water sewers, a recommendation which had been made by Dr. Abel Wolman in a survey made for the city last year. Criticizing the city's proposal to divert Longfellow Creek into a trunk sewer at a cost of more than $1,000,000, the commission suggested that, "considering the city's over-all sewage problem, money can be better spent by intercepting the sewage in a system of sanitary sewers and leave the storm water in its natural course."

Mayor William F. Devin acknowledged there is some contamination of city beaches but declared the city is working as rapidly as possible to correct conditions. Outfalls are being extended to correct the pollution.

Truman signs bill defining overtime

Time and a half pay for night work, Saturdays, Sundays and holidays—paid by many contractors in the construction industry—is now recognized as true overtime pay under the Wage-Hour Law.

President Truman on July 20 signed H. R. 858, a bill specifically approving in law overtime pay practices which were acceptable by the wage-hour office until the Supreme Court's upset decision in the Bay Ridge stevedoring case a year ago. In that decision, the court held that extra pay for working nights and at other unusual hours was not "overtime." Real overtime, the court said, is extra pay for working longer than a specified period of time or more than a specified number of days.

Thus, workers who were paid time and a half on a holiday or for a night shift, were entitled to "overtime on overtime" if they worked beyond 40 hours during the week. The time and a half was not counted as overtime, and the extra half pay had to be averaged out and added to the base rate to determine the "regular rate" on which real overtime would be due.

This is now corrected in the amendments to the Wage-Hour Law contained in H. R. 858. They provide that time and a half pay for work beyong a regular work day or work week, or for holidays and weekends, or for the sixth or seventh day of the work week is real overtime which may be credited toward any overtime pay due under the Wage-Hour Law. Also, the extra pay need not be included in computing the "regular rate" on which overtime must be based.

The new law has retroactive application, thus wiping out any pending or potential claims.

The House, in passing the final bill July 14 by a big 207-52 vote, accepted two amendments by the Senate. One made the new provisions applicable to all industries under the Wage-Hour Law, instead of limiting relief only to the stevedoring and construction industries, as the House did when it passed the original bill, 230-7, on Feb. 21. The other is the retroactive application.

The bill had the backing of contractors and the AFL building trades unions.

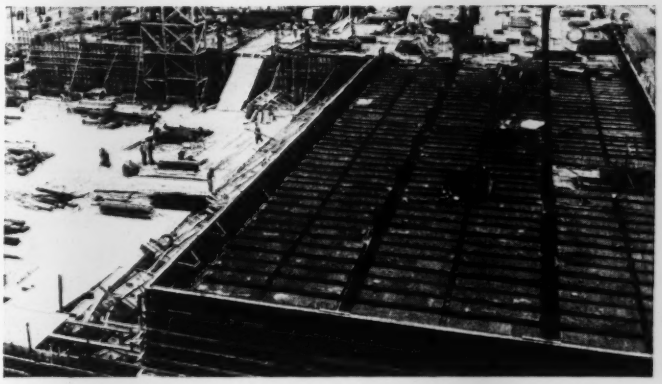
In its report on the bill, the House Labor Committee pointed out that the principle of the Bay Ridge decision was "creating serious difficulties in the maintenance of desirable labor standards arrived at through collective bargaining" in the construction and stevedoring industries particularly.

Pennsylvania road weights disputed by truckers

Pennsylvania's Gov. Duff wants no overweight trucks on Keystone State highways—even if takes temporary enforcement officers to keep them off.

Duff said, in rejecting suggestions that the state "be lax in the enforcement" of its existing laws, that a group exists which is "determined to defy the law and make the public like it."

His comment followed an attack by the Pennsylvania Motor Truck Association.



PACIFIC NORTHWEST'S LARGEST BUILDING construction project is this $7,000,000 Public Safety building at Seattle. It's up six stories now, has nine more to go. Of reinforced concrete construction with some structural steel, it is being built by the Kuney-Johnson Co.

LAMINATED TIMBER STRUCTURES can be creosoted without ill effect, if this Eugene, Ore., glued timber arch is sufficient evidence. A 120-ft., two hinged arch, the Culp Creek crossing was designed by Timber Structures, Inc., of Portland, to carry road, rail and foot traffic. The structure was plant-fabricated and is the fifth known creosote-treated, glued laminated bridge to be built.

N. Y. housing committee gets cost-cutting program

Builders, bankers, architects and building trades labor leaders representing four major areas of New York State have been appointed to 20 vice chairmanships of the Governor's Committee on Housing and Construction, State Housing Commissioner Herman Stichman announced last week.

A vice chairman and four associate vice chairmen were named for the metropolitan, eastern, central and western areas of the state. The 139-man committee itself will be divided correspondingly. The committee grew out of a three-day conference a year ago (ENR June 10, 1948, p. 74) which was called to discover ways of reducing building costs.

Among the committee's duties will be to:

1. Promote use of new materials and techniques for lower costs.

2. Increase apprentice opportunity in the building trades.

3. Survey, statewide, the average unemployment of building trades workers, the number of apprentices in training, and recommend on employment stabilization.

4. Ascertain effects on costs of local codes and recommend concerning local adoption of a uniform state code.

5. Advise as to members of the State Building Code Commission.

6. Survey state construction as to time and place, so state work may best be integrated with private work.

7. Stimulate interest in cooperative, limited-dividend housing.

8. Survey state housing needs, determine ability to meet them of private builders and advise on aiding such construction.

Dynamite wrecks span after thermite fails

Twisted steel of the collapsed Bluestone River bridge span was severed recently by dynamite charges after withstanding 6,000-deg. heat of seven charges of thermite with which the Virginia Bridge Company attempted to dismantle the wreckage several weeks ago.

Five men were killed in the span collapse on March 31 (ENR Apr. 7, p. 15). The State Road Commission of West Virginia and the Virginia Bridge Co. are continuing investigations but so far have not reached any determining cause of the failure.

Over 3,000 lb. of thermite placed at seven strategic points on the hanging, collapsed span failed to burn through the steel. Charges of thermite were encased in firebrick built around the bridge members and, when ignited, shot flames and smoke into the air and generated the 6,000 deg. The span was expected to fall in less than one minute after the thermite was ignited, but did not.

Ten charges of dynamite, totaling 250-lbs., were then set off to cut the dangling length of truss in two. The lower end fell flat on the reservoir bottom, and the upper section crashed on top of it. The latter piece struck the middle pier of the bridge, tearing away sections of small trees battened against it as protection. Aside from small chips from its corners, the pier was not damaged.

No attempt is being made to remove the wreckage of the 240-ft. span, and construction of the two spans on the north end of the bridge will be completed while new steel for the middle span is being fabricated.

New express highway near Boston starts soon

Construction work on a new 19-mi. section of the circumferential highway northwest of Boston will begin this fall, Gov. Dever of Massachusetts has announced. The project will cost about $20,000,000. This will be the largest outlay planned under the $100 million bond issue recently enacted to cover such improvements.

Construction will include 25 overpass highway bridges, seven railroad and three river bridges. There will be at least two 24-ft. lanes in each direction. Access will be limited, and a center strip will divide the lanes.

Contracts will be split in amounts varying from $1,000,000 to $4,000,000. The route will be located north and west of the present circumferential highway No. 128, shifting its course away from business and thickly settled residential areas. Engineers are now engaged in layout work. The first two sections, in the Lynn-Wakefield and Wakefield-Reading areas, are expected to be ready for construction early in the fall. Ultimately, the highway will form a perimeter expressway from Gloucester to Nantasket.

McNary Dam low bid is $15.8 million

U. S. Army engineers July 19 announced they had received a low bid of $15,835,539 for initial work on McNary Dam, in Oregon.

The bid was submitted by McNary Dam Contractors—a combination of the Guy F. Atkinson Co. of San Francisco; Ostrander Construction Co. of Portland and the J. A. Jones Construction Co., of Charlotte, N. C.

The bid covered: Initial stage cofferdam on the Oregon shore; concrete substructure for two main units; station service bay and assembly bay for the powerhouse; main second step of the cofferdam and portions of the Oregon shore abutments.

Only other bid on the job was one for $18,648,000, submitted by a combination including the General Construction Co., the Shea Co., and the Pacific Bridge Co.

The Atkinson-Ostrander-Jones bid was 23.5 percent above the government estimate— computed without profit—of $12,784,000.

Correction—In the article, "Stresses in Bolts and Piers for Wind Loads on Columns," (ENR July 7, p. 64), the righthand side of Eq. 4 should read $6e_p n$ instead of $e_p n$.

Airport work this year to total $67 million

New airport construction and development projects estimated to cost more than $67,000,000 will be started during fiscal year 1950 under the federal aid airport program. D. W. Rentzel, Administrator of Civil Aeronautics, last week announced the list of approved projects—314 in number.

The 314 projects will require nearly $30,000,000 in federal funds and more than $37,000,000 in local or state matching money.

Congress appropriated $14,500,000 in cash and approved $36,500,000 in contract authority for the federal aid program in this fiscal year. Of the cash, $11,500,000 goes to pay obligations incurred under previous authorizations, and $3,000,000 is for administration, research and planning.

Of the $36,500,000 in new contract authority, $500,000 is for work in the territories, $27,000,000 has been apportioned among the states as required by law, and $9,000,000 remains in the discretionary fund that may be used by the administrator without regard to state boundaries.

Legislation now before Congress proposes to change the present apportionment formula (75 percent for the states—25 percent for the discretionary fund) and put it on a 60-40 basis. The Civil Aeronautics Administration is back of the proposal. There is little chance of action being taken on it at this session.

If enacted into law, the change would release some $5,000,000 for use from the discretionary fund to meet the needs of about 30 states where project requests far exceed the available money. The legislation would assure the present 75 percent to all states that have projects ready to go. In 18 states, the state apportionment has not been fully taken up in approved projects.

The two biggest outlays in the 1950 list are for the Chicago Orchard and Greater Pittsburgh airports. At Chicago, federal funds will supply $1,250,000 of $4,730,000 budget for land, buildings and paving. For the Pittsburgh airport, federal aid amounts to $600,000 in a $4,500,000 schedule that includes land, buildings, paving, lighting and miscellaneous work.

Fiscal 1950 is the fourth year of the federal aid airport program that authorized $520 million of federal grants over a seven-year period. Cash and authorization approved for 1950 bring the total for the four years to $157 million. Congress has fallen far behind the schedule originally planned.

H. E. Riggs dead at 84, once headed ASCE

Henry E. Riggs, 84, retired chairman of the civil engineering department at the University of Michigan from 1912 to 1930, and a past president of the American Society of Civil Engineers, died recently. Born at Lawrence, Kan., he was graduated from the University of Kansas in 1886 and subsequently joined the Atchison, Topeka & Santa Fe Railroad, working on railroad construction. Later, Riggs served as chief engineer for the Ann Arbor Railroad.

Early in the century, he left the railroad and entered the University of Michigan where he received a degree in civil engineering in 1910. Upon graduation he was given the job of reorganizing the civil engineering department and was appointed its head.

Special jobs included financial valuation of all Michigan railroad properties for the state and valuation of the Detroit United Railway when the city of Detroit began proceedings to purchase the system.

In 1937, Riggs was elected president of the American Society of Civil Engineers. He headed the Michigan society several times.

Adm. F. R. Harris dies; drydock specialist

Rear Admiral Frederic Robert Harris, (Retired) 74, head of the Navy's Bureau of Yards and Docks just previous to World War I, and since 1927 a consulting engineer specializing in drydock and port construction, died July 20 in New York City.

As head of the New York consulting engineering firm of Frederic R. Harris, Inc., he was a participant in Drydocks, Inc.—a wartime group of consulting engineers which developed the sectional floating drydocks used with great effect by Allied navies in the Pacific campaigns. His latest work was as a member of the engineering board of the Port of New York Authority, and as chairman of the boards of consultants on Newark and LaGuardia airports, operated by the port authority.

A native of New York City (1875), he was a graduate of Stevens Institute of Technology (1896), and spent seven years with engineering firms engaged in port and harbor work.

He was commissioned a lieutenant (jg) in the Navy's Civil Engineer Corps early in 1903, and thirteen years later he became chief of the Bureau of Yards and Docks.

Two years later, after service as general manager of the U. S. Shipping Board's Emergency Fleet Corporation, Adm. Harris became president of the Board of Control of War Construction Activities at Hampton Roads, Va. He retired in 1927.

F. R. MacLeay dead; construction engineer

Francis Roderick MacLeay, 52, a construction engineer who also served as chairman of the New Rochelle (N. Y.) Municipal Housing Authority, died July 21 at New Rochelle.

A native of Barre, Vt., Mr. MacLeay was an engineering graduate of Northwestern University, and his career as a construction engineer and consultant covered work on the George Washington, Henry Hudson, Triboro and Whitestone bridges in New York City, and bridges over the Delaware and Susquehanna rivers.

He left his work as a construction man in May, 1947, to serve for a year as chairman of his home city's housing authority. Since June 7 of this year he served as chief engineer for John A. Johnson Inc., contractors, of New York City.

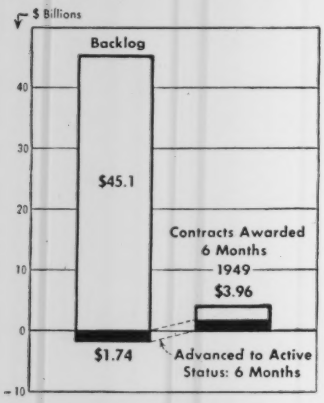
Arthur Ellwood dies; engineered Greek ports

Arthur Ellwood, 40, who supervised much of the engineering work on reconstruction of Greek ports and the Corinth Canal, died July 21 in New York City.

A graduate of the College of the City of New York, Mr. Ellwood was for ten years engaged as a design engineer with various municipal and federal construction agencies. In 1941, he joined the late Frederic R. Harris as a specialist on floating drydocks, continuing in that post until he was commissioned a lieutenant commander in the Navy's Civil Engineer Corps, to work on the floating drydock construction program. He was associated with the Knappen, Tippetts, Abbett Engineering Co. at the time of his death.

Airports for South Dakota—More than $2,000,000 is being spent on airport development in South Dakota. The Huron and Rapid City projects, both nearing completion, account for half the total. Requests have been made for federal grants to build emergency fields at five additional cities.

CONSTRUCTION BUSINESS



Backlog up $1.9 billion in first half of 1949

The backlog of proposed heavy construction increased 58 percent more in first-half 1949 than during the same period last year—despite the fact that 30 percent more work has moved from shelf to active status this year.

In the first six months of 1949 more than $3.6 billion in new projects was added to the backlog. In the same period a total of $1.7 billion advanced to the contract stage. This left a net increase in the backlog of $1.9 billion.

Total heavy construction reserve now is $45 billion, 4.5 percent above the January 1st figure of $43.2 billion, according to ENGINEERING NEWS-RECORD's continuing inventory of proposed construction.

Heaviest gains for the half appear in private work, which accounts for $1.2 billion of the total increase. Public works are up $700 million, or two percent, compared with a 10 percent increase in proposed private construction.

The backlog of industrial building was the point of highest dollar volume increase during the half, $516 million or 13 percent. Commercial building gained $330 million or 7 percent; private unclassified work (pipe lines, transmission lines, etc.) gained $366 million or 10 percent; and private bridges are up $13 million or 34 percent.

Proposed public building climbed $247 million in six months, for a three percent net increase. Streets and roads—the second largest addition to the public backlog—gained $222 million, or six percent. Earth work and drainage is ahead $123 million, or two percent at the half; public bridges are up $72 million or five percent; waterworks gained $30 million or three percent; and public unclassified $59 million, one percent.

Sewerage, the only class of proposed work to decline during the period, is off $34 million, two percent of the $2.18 billion sewerage construction reserve on January 1st. From January through June 1949, $87.9 million in sewerage projects came out of the backlog, as they advanced to the contract stage.

The federal backlog has increased $403 million so far in 1949, four percent, to a total of $9,700,000, or roughly a fifth of the total measured proposed construction backlog.

The Middle Atlantic states saw the largest dollar volume increase in proposed construction for the six months, $626 million, or 6 percent. Other sections saw the following gains: Middle West up $372 million, 6 percent; West of the Mississippi up $351 million, three percent; Far West up $224 million, three percent; the South up $206 million, five percent; and New England, which shows the largest relative increase, up $166 million, 8 percent.

Third highest year seen for industrial building

Industrial building this year is the third highest on record, according to a half-year tally of industrial contract awards by ENGINEERING NEWS-RECORD. (See also p. 23 this issue.)

In the first six months of 1949, $504 million industrial construction was recorded, of which 30 percent was for public utilities, and 23 percent for processing industries. Machines and machine parts, the third largest single class, accounted for only 11 percent.

Food, metal refining and textile, general manufacturing, refrigeration and cold storage are all running ahead of last year in contract awards, with the increases ranging from 21 percent for general manufacturing to a 23-fold rise over last year's low rate of automobile factory construction.

Both railroad and automotive service construction have fallen off in 1949, at roughly the same rate.

Construction money rates

The cost of borrowing to finance construction is from 3 to 1.5 percent less in June 1949 than a year ago for industrial and utility companies, but 1 percent more for municipalities as measured by bond yields. Also commercial loan rates in March 1949 were still moving higher, 7 to 14 percent above June last year.

Industrial bond yields went down to 2.57 percent from 2.66 a year ago, a 3 percent decline. Public utility bond yields are down to 2.73 percent, off 1.5 percent from the rate a year ago; and railroad bonds at 2.76 percent, yield 2 percent less than in June 1948.

Municipals, now yielding 2.28 percent, are one percent above the June 1948 rate of 2.26.

The trend since January 1949 has been downward for all but municipal yields, which started at 2.15 percent. January industrial yields were 2.58, public utilities 2.77, and railroads, 2.78 for grade A1 plus securities reported by Standard & Poor's Corp.

Commercial loan rates in 11 southern and western cities have increased from 2.92 percent in June 1948 to 3.12 percent in March of this year, according to Federal Reserve Board reports. In 7 northern and eastern cities, first quarter commercial rates were 2.68 compared with 2.49 in June of last year, and in New York City the March rate was 2.42, up from 2.12 in June 1948.

Industrial Building Contracts

Industry	1949 (6 mos.)	No.	1948 (6 mos.)	No.	% chge. $ volume
Transportation Service:					
1. Railroads	$4,565,000	23	$6,277,000	32	—27
2. Automotive	15,861,000	135	23,060,000	186	—31
Public Utilities	151,092,000	55	95,246,000	50	+59
Process Industries	114,453,000	183	223,537,000	192	—49
Food Industries	50,301,000	186	39,133,000	182	+29
Metal Refining & Rolling	22,687,000	15	9,243,000	10	+145
Metal Working Plants:					
1. Auto Factories	16,795,000	6	723,000	6	+2,222
2. Aircraft Factories	150,000	1	500,000	1	—70
3. Foundries	273,000	3	3,296,000	5	—92
4. Mach. & Mach. Parts	55,833,000	121	59,087,000	166	—6
Radio	953,000	4	470,000	2	+103
Textiles	7,283,000	36	5,578,000	34	+31
Wood Industries	2,887,000	22	4,618,000	23	—37
General	59,344,000	277	49,110,000	310	+21
Refrigeration & Cold Stor.	1,813,000	9	1,286,000	4	+41
Total Industrial	**$504,290,000**	**1,076**	**$521,161,000**	**1,203**	**—3**

BIDS AND BIDDERS

Marble Falls Dam and Power Plant—Lower Colorado River Authority, Austin, Tex., will open bids August 3 for $16,000,000 Marble Falls Dam and power plant on Colorado River, Burnet County, Texas.

Master Sewer System—Bids will be opened about November 21 for master sewer system for the City of Tampa, Fla., to cost about $13,500,000. Greeley & Hansen, Chicago, Ill., are consulting engineers.

Housing—Housing Authority of Houston, Tex., plans five housing projects to cost about $19,000,000 under Federal Housing Law.

Road—L. G. De Felice & Son, Inc., North Haven, Conn., was low bidder on 4.74 mi. of Pennsylvania Turnpike in Chester and Montgomery Counties at $4,689,418 when the Pennsylvania Turnpike Comm., Harrisburg, opened bids July 22.

Prison—State Div., Architecture, Sacramento, Calif., received low joint bid for Medium Security Prison at Soledad, Calif., from M & K Corp., San Francisco; Frederickson & Watson Construction Co., Oakland; and Piombo Construction Co., San Francisco, at $4,488,000. Anson Boyd, Sacramento, is state architect.

Apartments—P. W. Paul, Dravosburg, Pa., plans twenty six-story apartments, in Scott County, near Pittsburgh, Pa., to cost about $10,000,000. Philip Friedman, Pittsburgh, is architect.

Pier—Dpt. Wharves, Docks & Ferries, Phila., Pa., awarded contract for completing Pier 80 to Hughes-Foulkrod Co., Phila., at $3,100,000.

East Branch Dam—The Hunkin-Conkey Constr. Co. and Gordon & Hinman, Cleveland, O., have been awarded contract to construct embankment and spillway, East Branch Dam on Clarion River, Pennsylvania. The contract was awarded to the U. S. Engineers, Pittsburgh, at $4,887,019.

Winchester Wasteway—Bureau of Reclamation awarded contract for section of Winchester Wasteway, Columbia Basin Project, to J. A. Tertelling & Sons, Inc., Boise, Ida., at $1,088,792. This contract brings to $13,837,279 the total of Columbia Basin projects now held by this contractor.

Pipe Line—Smith Contg. Co., Fort Worth, Tex., will build 131-mi. crude oil pipe line between Corsicana and Chico, Tex., for Texas Pipe Line Co., Houston, at $2,620,000.

Hospital—University of Wisconsin, Madison, awarded contract for hospital addition to J. H. Findoroff & Son, Madison, at $2,424,000. Schmidt, Garden & Erikson, Chicago, Ill., are architects.

Veterans Administration Office—Public Bldg. Admin., General Services Admin., Wash., D. C., will issue bidding material on or about August 1 for Veterans Administration Regional Office Building at Columbia, S. C. $1,400,000-$1,600,000 is available for construction.

Water Supply Dam—Ranger Water Dist., Ranger, Tex., plans dam for domestic water supply on Leon Creek, Ranger, Tex., estimated cost $2,500,000.

Apartment—Jenkintown Gardens, Inc., Phila., will build, by separate contracts, garden-type apartment at Abington, Pa., to cost $5,500,000.

Office—D. Boileau Ltd., Montreal, Que., has been awarded contract to construct office for Society of Artisans Canadien Francais, in Montreal. The estimated cost is $3,000,000. H. S. Labelle, Outremont, Que., is the architect.

Apartment—Sergeant Jasper, Inc., Charleston, S. C., soon lets contract for 14-story apartment house in Charleston, to cost about $2,500,000. Bissett, Carlisle & Wolff, Columbia, are architects. E. Gaillard Dotterer, Charleston, is engineer.

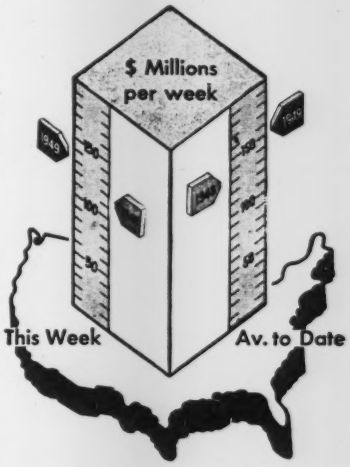
Housing—City of Boston Housing Authority, plans two housing projects in Roslindale section at $3,800,000.

Dormitories—University of Houston, Houston, Tex., received low bid for constructing five dormitories from R. F. Ball, Houston. The low bid was $2,133,127. Lamar Q. Caton, Alfred C. Finn, Robert J. Cummings and Reg. F. Taylor, all of Houston, are architects.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Aug. '49	478.28	229.91
Building Cost	Aug. '49	350.72	189.59
Volume	July '48	280	123



Activity This Week

As reported to ENR (in millions of dollars)

Amount of Contracts let

	Week of July 28 1949	Cumulative 1949 (30 wks.)	Cumulative 1948 (31 wks.)	% chge av.wk.
Federal	$18.0	$660.9	$602.0	+9
State & Mun.	61.9	1,784.5	1,463.2	+26
Total Public	$79.9	$2,445.4	$2,065.2	+22
Total Private	51.9	2,134.0	1,981.9	+11
U. S. Total	**$131.8**	**$4,579.4**	**$4,047.1**	**+17**

Contracts by type of work

	This Week	Cumulative 1949 (30 wks.)	Cumulative 1948 (31 wks.)	% chge av.wk.
Waterworks	$1.9	$95.1	$110.7	−11
Sewerage	3.6	144.0	127.6	+17
Bridges	2.6	191.6	172.7	+15
Highways	27.7	522.3	595.3	−9
Earthwork, Waterways	13.6	350.6	300.3	+21
Buildings, Public	21.7	950.0	631.2	+56
Industrial	5.5	551.1	580.6	−2
Commercial	35.1	1,342.3	1,153.8	+20
Unclassified	20.2	432.4	374.8	+19

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1949 (30 wks.)	Cumulative 1948 (31 wks.)	% chge av.wk.
NON-FEDERAL	$3,124.6	$2,869.3*	+12
Corporate Securities	1,497.4	1,349.7	+15
State and Municipal	1,627.2	1,092.3	+54
Federal-Aid Highway	....	427.3	....
FEDERAL	....	1,558.9	....
Total Capital	**$3,124.6**	**$4,428.2**	**−27**

*Correction: 29 wks., $2,684.3; 30 wks., $2,786.1.

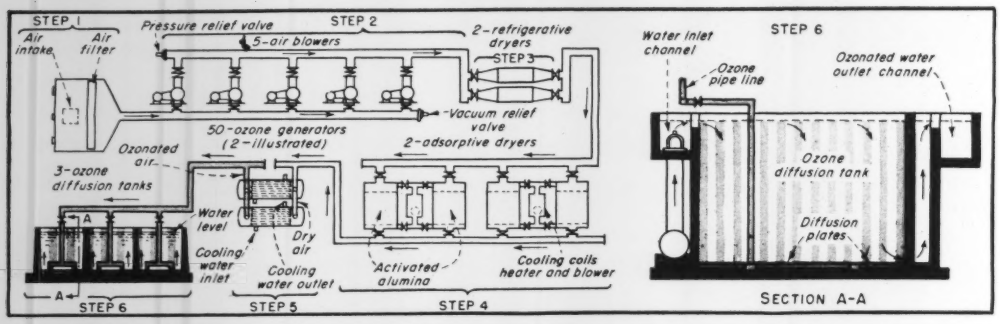


Fig. 1. DE-MOISTURED by refrigerative and adsorptive dryers, a small percentage of air is converted to ozone. Ozonated air is diffused into water in contact tanks for oxidation and improvement of taste and odor.

Ozone in Quantity: How It Is Produced

Elbert J. Taylor
Chief

Elwood L. Bean
Principal Assistant Engineer

Bureau of Water
Philadelphia, Pa.

THE WORLD'S LARGEST ozonation plant recently went into operation at Philadelphia, Pa. With a maximum capacity of 1,250 lb. of ozone per day, the plant is designed primarily to reduce compounds causing tastes and odors in waters drawn from the notorious Schuylkill River, to a point that will satisfy aesthetic demands of the consuming public. The treatment is also effective in sterilization of water and in oxidization of organic matter, iron and manganese.

Outline of process

Briefly the process is: Air is sucked through a wall opening, filtered and "pressured up" by blowers, and dried. Then a small percentage of the air's oxygen is converted to ozone and ozonated air is bubbled through the water to "burn out" all oxidizable materials with resulting taste and odor improvement (Fig. 1).

Step 1—Air is drawn through an opening in the building wall and a two-unit electronic-precipitation filter inclosed in a steel cabinet. Filter units are readily removable for replacement of filter tissue.

Step 2—Five 440-cfm., parallel-connected, positive-displacement blowers insure flexibility of air supply. Full ozone production can be maintained with three blowers leaving ample standby capacity.

Step 3—Either one of two refrigerative dryers (Fig. 2) lower the temperature of 2,000 cfm. of air to 50 deg.

Step 4—Either one of two-tank adsorptive dryers (Fig. 3) completes demoisturing. Dew point of the discharge is not higher than -60 deg. during 8-hr. operation period of a single tank.

Step 5—Fifty generators in two parallel banks (Fig. 4) of 24 and 26 units—with a total daily capacity of 1,250 lb.—are designed to produce ozone at the rate of 0.5 to 1.0 percent of the weight of dry air blown through them. Conversion of oxygen to ozone takes place as the air flow through continuous electric coronas in the generators. Coronas are formed in cylindrical annular openings in a boiler-like shell with 85 graphite-lined tubular glass electrodes within stainless steel tubes, a 15,000-v. alternating current being impressed on this circuit.

Step 6—Ozonated air is bubbled upward through 18½ ft. of water for taste and odor treatment (Fig. 5). This is done in a three-section contact tank through which the water flows continuously as ozone is diffused through porous-plates on the bottom.

Ozone dosage averages 1.6 ppm. but a maximum of 4.0 ppm. may be added.

Equipment is cooled

Refrigerative and adsorptive dryers as well as each ozone generator are cooled with water taken from a nearby high-service pumping station. Discharge is returned to coagulating basins at the filter plant for re-use.

Arrangement of supply and discharge piping for ozone generators is symmetrical: sizes were selected to distribute cooling water evenly to each unit. Cooling water enters near the bottom at one generator header and leaves at the top of the opposite end to enter collector pipe.

Cooling-water consumption for refrigerative and adsorptive dryers and ozonators, under summer conditions, is estimated to approximate, respectively: 70; 15-30; and 7 gpm. per unit. Its maximum temperature may reach 85 deg. and total consumption will be about one mgd.

Adsorptive dryers must not only be cooled during operation but also dried out at intervals. Partially moistened tank-beds of activated alumina are re-activated while the parallel unit is in service. Re-activation (drying) is controlled semi-automatically. After air flow is diverted to the parallel unit, water is introduced to the cooling coils through a manual valve. The push-button-controlled re-circulating blower circulates heated air downward through the alumina until temperature at the bottom reaches 250 deg. Then the heater shuts off automatically but the fan operates until tank approaches room temperature. At this point the fan automatically disconnects and the tank-bed is ready for re-use. Throughout the drying process, hot air leaving the tank is cooled in passing over water coils. Moisture condensed from the air is wasted through a trap.

Re-activation requires less than four hours for heating and drying, and about three hours to cool. Either ad-

sorptive unit will deliver dry air for 24 hr. without re-activation.

Operational considerations

Step 1—By maintaining a clean supply of air, filters insure continuity and economy of service. Dirt and dust can cause: Blower-rotor wear; in refrigerative dryers—clogging of coils or decreased efficiency with lesser depositions; in adsorptive dryers—clogging of media, requiring its replacement or allowing passage of moisture; and in generators—electrode deposition causing reduced efficiency or even destruction of electrodes.

Step 2—Experimental data indicate that generation efficiency is dependent on concentration of ozone produced. Efficiency of production decreases as concentration rises above one percent or decreases below 0.5 percent. These limitations call for an air-flow of 1,000 to 2,000 cfm. to produce 1,250 lb. of ozone per day. If lesser amounts of ozone are generated, air flow is reduced proportionately.

Number of blowers for ordinary service will vary from two to four, depending on required ozone production. Blower scheduling will be determined by a complete check of all plant operating efficiencies. Full ozone production may be maintained with three blowers operating; standby capacity is two units.

Step 3—Present-day efficiencies of air-drying equipment has made generation of ozone on a large scale practical. What might be termed "absolute" removal is essential to processing continuity.

Philadelphia's atmosphere at times contains 140 grains of moisture per lb. of dry air. This corresponds to 90 percent humidity at 81 deg. F., 75 percent at 86 deg. and 65 percent at 91 deg. With this moisture load, total required removal is as high as 139 grains per pound.

Refrigerative dryers are designed to reduce air temperature at blower discharge from 230 deg. F. at 10 psi. to 50 deg. Air temperatures is decreased to about 95 deg. by passage over water-cooling coils; the remaining drop is produced by refrigeration coils reducing moisture content to not more than 50 grains per pound of dry air.

Step 4—De-moisturing of refrigerated air is completed in adsorptive dryers. With one tank in service at plant capacity, a concentration of 1.08 percent ozone is indicated unless the dryer is operated at over-rated capacity. Tests may show that best efficiency will be obtained when both adsorptive dryers operate at reduced capacity, particularly during maximum ozone production.

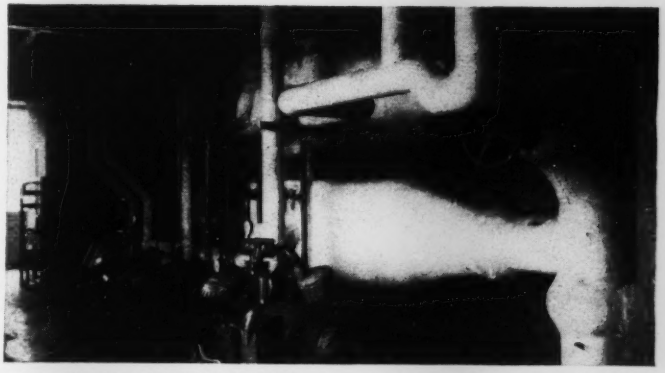


Fig. 2. **REFRIGERATIVE DRYERS** remove most of the moisture from filtered air.

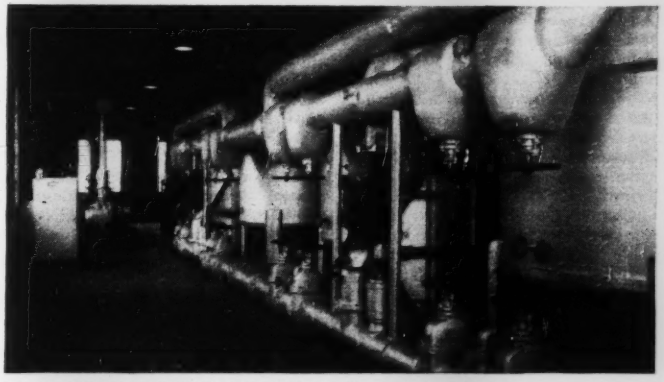


Fig. 3. **ADSORPTIVE DRYERS** eliminate the remaining moisture.

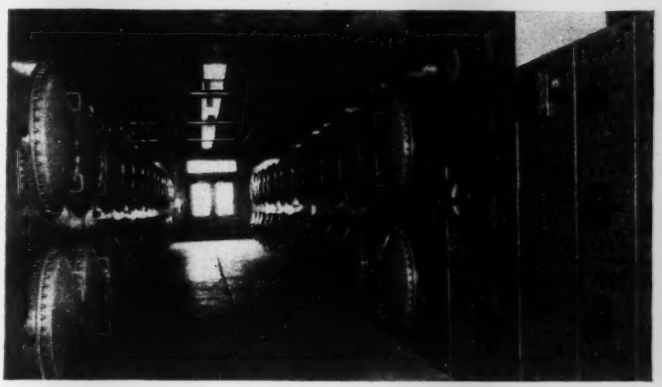


Fig. 4. **CONTINUOUS ELECTRIC-CORONA GENERATORS** convert a small percentage of the dried air to ozone.

Step 5—With With individual push-button controls and air meters, each generator produces 25 lb. of ozone per day. Current consumption

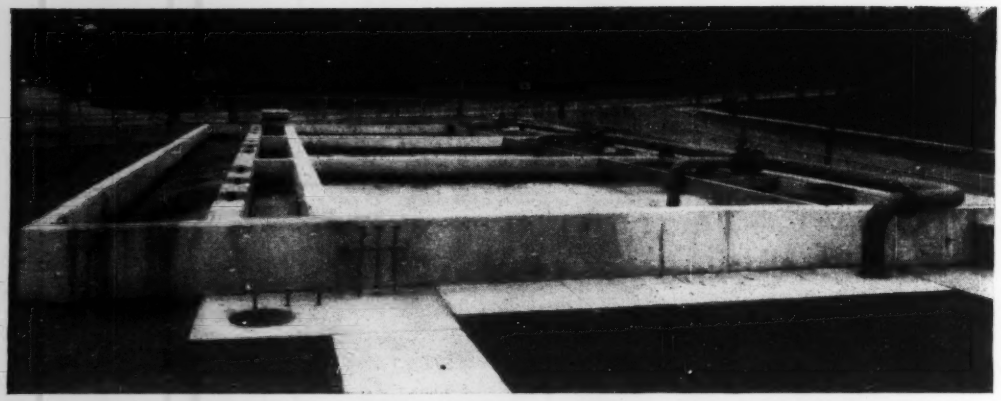


Fig. 5. OZONATED AIR is diffused into water through porous plates at the bottom of contact concrete tanks.

for each generator is about 9 kw. and heat generated about 550 Btu per min.

Automatic air pressure and cooling-water thermostatic switches prevent overheating damage to generators. Service-door switches that disengage when doors are open protect workers from high-voltage electric shock.

Step 6—Flow of ozonated air into contact tanks is controlled by manually operated valves. Water flow is automatically adjusted to prevent spillage by a butterfly valve on the inlet, an elevation control from the sedimentation basins, and mastering controls from influent flumes to each of the three basins.

Data to be collected

Considerable study will be warranted to work out the most desirable and economical methods, controls and procedures for operation, and much information on large-scale ozone generation will result. For instance, data will be obtained on average amount of current required per pound of ozone produced by up-to-date equipment, life of various units, amount and cost of maintenance.

It is planned to vary number of generators in service with changes in rate of flow through contact tanks and changes in ozone demand of the water. Ozone demand of the water will ordinarily not change rapidly; changes will largely follow rates of filtration, which will be indicated at the meter

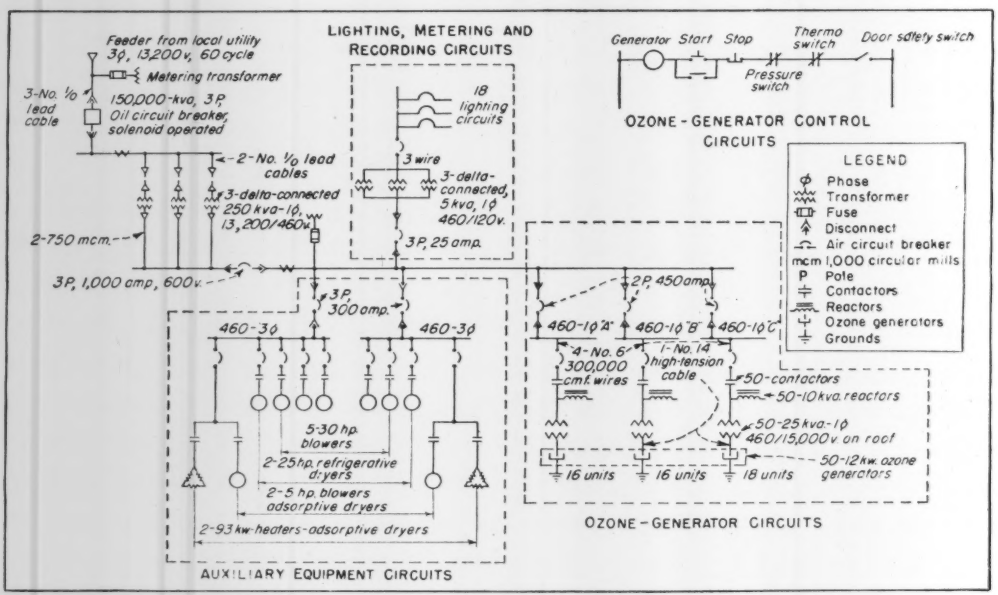


Fig. 6. ELECTRICAL WIRING DIAGRAM. Two auxiliary equipment circuits insure continued plant operation when part of the units are shut down.

panel. Ozone residuals will be checked throughout the day.

The complete electrical installation is shown in Fig. 6. To prevent all equipment from being put out of service by a single circuit breaker, auxiliary equipment is served by two circuits. The first includes three blowers, one refrigerative and one absorptive dryer; the second, the remaining two blowers and dryers. Circuit breakers and line starters for these units

DESIGN AND ENGINEERING DATA FOR THE PHILADELPHIA, PA., BELMONT OZONATION PLANT

Ozone Dosage: 1.6 ppm. average; 4.0 ppm. maximum (design basis).

Plant Capacity: 1,250 lb. ozone per 24 hr. for 36 mgd. of water.

Air Cleaning: Wall inlet, 2 ft. square; electronic-precipitation filter, two 1,000-cfm. removable units in 2½ x 3 x 4½ ft. steel cabinet; filter tissue electrified by a.c.-to-d.c., 110/12,000-v. power pack; total capacity—2,000 cfm.

Blowers: Five rotary, positive-displacement, non-internally lubricated, heavy-duty units; unit rating—400 cfm. at 400 rpm. against 10.5 psi.; multiple V-belt connections; 30-hp. squirrel-cage, induction, 3-phase, 60-cycle, 440-v. motors; individual push-button controls; 12-in. suction header from filters with adjustable relief valve; 6-in. suction takeoffs with hand valves; 6-in. discharge risers with gravity check and gate valves; 10-in. overhead discharge main with spring-loaded relief valve limiting pressure to 11 psi. to refrigerative dryers all pipes lines with bituminous enamel; maximum capacity and best-efficiency operating range—2,000 and 1,000-2,000 cfm., respectively. 60 percent standby with three units operating.

Refrigerative Dryers: Two parallel, horizontal 2,000-cfm. units; 25-ton compressors driven by direct-connected, 25-hp. 440-v. 3-phase, 60-cycle induction motors; performance—air from blowers cooled from 230 to 50 deg. F.; maximum moisture content in cooled air 50 grains per pound. 100 percent standby; 8-in. manual-valve inlets and outlets; pipes lined with bituminous enamel; dryers and discharge pipes insulated with 2-in. cork.

Adsorptive Dryers: Two 2,000-cfm. units; each with two, 6- ft. dia. 6-ft. high steel tanks 4,800 lb. of ¼-in. to 8-mesh activated alumina in each tank; 5-hp. electric-driven fan and 93-kw. air heater operated from push-button, semi-automatic-controlled drying cycle; 100 percent standby; top of tanks insulated with 2-in. cork; 8-in. manual-valve insulated inlets and outlets; inlet pipes lined with bituminous enamel; 10-in. insulated, unlined header branching to 8-in. lines over ozone-generator banks; performance—inlet air temperature 50 deg., outlet dew point not more than —60 deg. during 8-hr. continuous operation.

Ozone generators: 60 units each rated at 25 lb. of ozone per 24 hr.; shells—⅛-in. stainless steel, 39¾-in. diameter, 53 in. long; 85-3⅛-in. diameter tubes of 1/16-in. stainless steel, about 40 in. long, between and opening through stainless-steel inside headers, 13½ and 5 in., respectively from ends of shells; flanged 3/16-in. steel outside headers, bituminous enamel on inside face, bolted to shell; 5-in. glass observation ports in outside headers; Pyrex glass tubes, open on one end and coated on inside with graphite under protective enamel, within each stainless-steel tube; 1/16 to 2/16-in. thermoplastic annular-opening spacers; contact springs cemented to glass tubes at open ends and coated with liquid silver; aluminum-lead wires and plugs from 15,000-v. entrance bushing at top of inside header to glass tube; two banks of two-tiered generators facing central aisle; lower tier cradled on concrete floor; upper tier, piping and electrical equipment on I-beam frames; generator banks inclosed by 9-ft. high, 10-gage steel paneling, push-button controls and air flow meters for each generator on panel; one access door in rear paneling per four generators; performance—0.5 to 1.0 percent of air's oxygen converted to ozone; 1½-in. valve-controlled, air-supply line into longer header section of each generator plus one shut-off valve per four generators; 1½-in. individual vavled ozonated-air discharges, 2½-in. valved risers per four generators and 8-in. collectors over each bank, 10-in. underground line to contact tank, all stainless steel.

Cooling-water Services: 8-in. cast-iron supply from 55-psi. distribution main; 8 x 4 Venturi in water-pipe gallery under building; 2½-in. copper tubes to and from refrigerative and adsorptive dryers that consume 70 (maximum) and 15-30 gpm. of water; maximum water temperature about 85 deg.; 4-in. brass pipes over generator banks, each with 55-psi. maximum, pressure-regulating valve; 2-in. takeoffs per four generators; one-inch takeoffs and discharges to bottom and from the top (at opposite ends) of each generator; 6-in. collectors over banks; 8-in. return to coagulating basins; Generator consumption—about 7 gpm. for 550 btu at 9-10 kw. of electricity and 10-deg. temperature rise; total consumption in summer about one mgd.

Contact Tanks: Three, 25-ft. square units; valved 8-in. ozonated-air lines down to distribution channels in each floor; distribution channels—5 in. wide, 5 to 7 in. deep, square layout in plan; covered with non-porous concrete slabs, circular openings in walls; chamber, 2¼-in. deep from top of channel, covered with one-inch, bitumen-joint porous plates; plate friction—8.5 in. of water at 2 cfm. per plate (1,000 cfm. per tank). Channel and Chamber pointed with bituminous enamel. 18½ ft. water depth; 48-in. supply main with 48 x 24 Venturi; six 24-in. vertical risers into inlet channel; three aluminum inlet weirs per tank at top; baffle wall opposite weirs with five outlets at bottom into 2-ft. wide riser section with stop-log outlets to 5-ft. wide collection channel; 48-in. pipe to treatment flume of existing plant; water elevation automatically controlled by butterfly valve on inlet and by water-elevation in sedimentation basins and in influent channel; 6-in. tank and 2-in. channel drains with stainless-steel valves on the latter; 10-min. thoretical maximum-flow detention at maximum flow.

Equipment Housing: One-story brick building, 53.75 x 94.0 ft.; concrete floors and concrete roof on steel girders; two floor-drained galleries for ozone, air and water piping under floor; four monorail hoists over generator-header plates to facilitate servicing; six unit thermostatically controlled unit heaters, three at 84,000 Btu. per hr., two at 115,000 and one at 33,000.

Electrical Services: See wiring diagram (Fig. 6).

Protective Devices: Air-pressure and cooling-water thermostatic switches in generator shells; service-door safety switches; safeguarded high-voltage terminals and equipment.

Recording and Indicating Meters: Water to-be-treated inflow to contact tank; cooling-water flow; total air flow; air pressure in main; dew-point indicator on absorptive dryer discharge; temperature in air line to generators; temperature of cooling water to generators; cooling-water pressure gages on each supply line and on discharge; meters mounted on one central board with clock; thermometer and hygroscope on atmosphere-air intake; cooling-water gages, thermometer and hygroscope are indicating only; all others are indicating and recording.

Power Requirements: 8 to 9 kwh. per lb. of ozone produced; 2-3 kwh. for air supply, drying and other auxiliary equipment; total current consumption—10 to 12 kwh. per lb. of ozone.

Cost: Total—$1,000,000 including engineering, inspection and miscellaneous expenses; apportionment—70% process equipment, 4% electrical services; 10% building and 16% contact tanks.

are mounted on the wall at one point but push-button controls are located at each unit.

Three single-phase circuits for the generators are provided in three wall-mounted cabinets containing 16, 16 and 18 switches, respectively, with overload trips. Each switch controls an individual-generator circuit.

From these cabinets, 460-v. circuits extend to individual-generator contactors and then to 460/15,000-v. transformers on the roof. From the 25 KVA. transformers, high-tension cables connect to the generator electrodes. These cables are fully insulated to the ground for 15,000 v. Expensive and cumbersome high-tension switchgear is avoided by this design. Reactors are shunt-connected on the 460-v. or primary transformer circuit. These are required to correct the power factor which would otherwise be about 60 percent leading, the generators acting as condensers.

Circuits to individual generator contactors are energized by closing a switch in the wall cabinet that lights a green light on the control panel at the unit. When the start button is pushed, the contactor closes and places the unit in operation. If the contactor closes and remains closed, a red bulb is lighted. Otherwise, only the green lamp will remain lighted. It indicates that the circuit is energized to the individual contactor; the red light that the generator unit is operating electrically.

Generators are taken out of service by the stop button at the units, or by the switch in the wall cabinet.

Switch arrangement

Each of the three wall cabinets represent a separate phase, there being sixteen switches for generator circuits in each of two of these, and eighteen in the third. Feeders from these are alternated down the line of generators so that the first two generators are on the phase "A", the second on phase "B", the third on phase "C", etc. In the cabinets, pairs of switches are connected in identical order, the top pair in each cabinet, representing the first two generators of that phase in the line, and so on down the line.

Throwing on one or more horizontal lines of switches will, therefore, produce a balanced phase loading. Likewise, starting all generators in any block of six or twelve by push-buttons will produce balanced loading. An ammeter is also provided, with switch, to check phase loading.

Power requirements are estimated at 8-9 KWH per pound of ozone produced and 2-3 KWH for air-supply, drying and other auxiliary equipment. Total electrical consumption is estimated at 10-12 KWH per pound of ozone.

Acknowledgments

Cooperating in design of the ozonation plant were: H. O. Heiman, assistant electrical engineer, Bureau of Water; V. A. Hann, director, Ozone Processes Division, and P. B. Williams, chief engineer, The Welsbach Corporation. Morris Knowles, Inc. are consulting engineers for the Bureau of Water.

The building and contact tanks were constructed by Frank V. Radomski & Sons. Plumbing was installed by Edward F. Roberts Co., Inc. Electrical work was done by W. V. Pangborne & Co., Inc., partly by direct contract and partly as sub-contractor to the Welsbach Corp. who supplied and installed all ozone-processing equipment.

Among the equipment manufacturers are: Air filters—American Filter Co., Louisville, Ky.; air blowers—Sutorbilt Corp., Los Angeles, Calif.; refrigerative dryers—Carrier Corp., Syracuse, N. Y.; adsorptive dryers—C. M. Kemp Co., Baltimore; ozone generators—Welsbach Corp., Philadelphia; porus plates—Norton Co., Worcester, Mass.; high-tension switchgear—Roller-Smith Co., Bethlehem, Pa.; and low-tension switchgear—Westinghouse Electric Corp., Pittsburgh.

Tacoma Finds Water-Line Surge Possible Earthquake-Damage Source

Although damage to the Tacoma, Wash., water system was comparatively minor, the recent earthquake revealed an important secondary effect—a surge similar to water hammer.

First noted in detailed examination of records of pressure meters, the surge is considered directly responsible for some damage.

The pressure fluctuations were quite rapid and of short duration. If the earthquake had been of longer duration, it is reasonable to assume that serious damage to the lines might have occurred from excessive pressures, near vacuums, or both.

Greatest pressure variation was noted in lines located on tideflats—an area where greatest structural damage might normally be expected. In all, emergency service and later repairs were made at 25 different spots on the distribution system; nine of these were in the tideflat area.

Pressure variation was noted by 23 recorders on the distribution system. It ranged from a minimum decrease of two psi. to a maximum of 74 psi. Minimum and maximum increase in pressure were three and 65 psi., respectively. With operating pressures averaging 78.9 psi., the decrease averaged 17.3 psi. and the increase 19.2 psi.

A near extreme example occurred in the 1,200 block of Taylor Way where the normal pressure is 104 psi. The pressure increase was 34 psi. and the decrease 74 psi. In the vicinity of this recorder, five service pipes were broken and one lead joint pulled out. However, this type of damage could not very well have resulted from the pressure surge alone.

Directly attributable to the pressure surge was displacement of three 4-in. air-valve floats on a 52-in. gravity-system pipeline from the Green River watershed. Much of the other damage in the system could have been caused by the pressure variation. For example, a 12-in. cast-iron pipe operating under 115 psi. was cracked on the bottom at the middle of a section, and a large piece blew out.

Most typical damage was to service lines, believed due to the shearing action of the earth movement. There were several instances of leaking or pulled lead joints in cast-iron pipe.

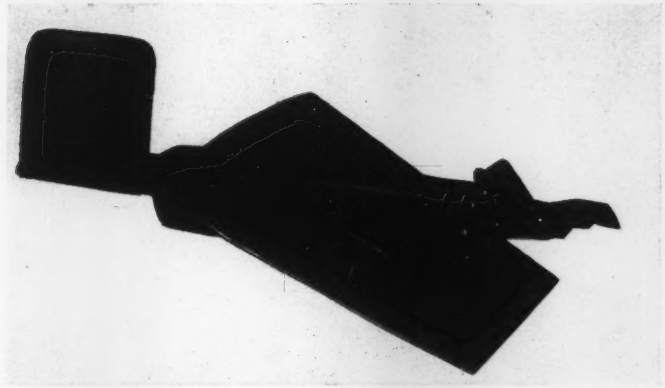
Slide caused damage

The worst damage on the whole system was caused by an earth slide that took out a 60-ft. length of two parallel 12-in. cast-iron mains.

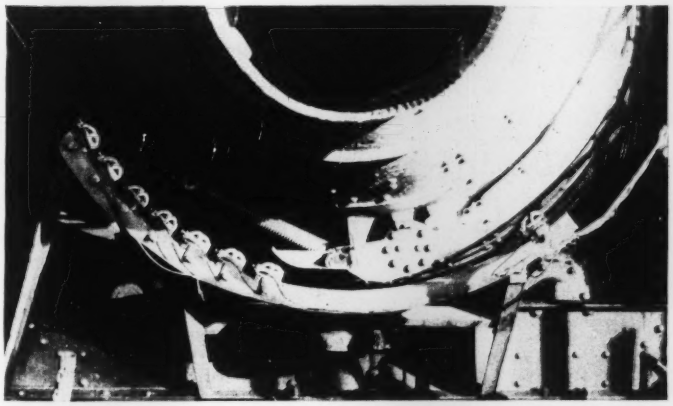
Some leaking was noted on circumferential joints on a riveted steel supply line, operating under 500-ft. head. Most of the leakage occurred on bridge crossings and where the pipe was supported on concrete cradles cast on piling.

No section of Tacoma was without water as a result of the earthquake. Two-way radio communication with maintenance trucks was of paramount importance in quickly finding and localizing the damage that did occur.

The foregoing comments are based on data made available by W. A. Kunigk, superintendent, water division, Department of Public Works, Tacoma, Wash.



REACTION BUCKET registers plasticity of concrete for Allatoona Dam.



MOUNTED IN MIXER, the device is tilted by varying pressure of the concrete and meets electrical contacts outside the mixer, recording workability.

Device Reports Concrete Consistency

HIGH DEGREE quality control of concrete was attained by the Corps of Engineers at Allatoona Dam, Ga., with a "plastograph"—a meter for measuring the plasticity of concrete during mixing. Tests were conducted with a 4-cu. yd. tilt-type mixer during a two-month period in which 24,000 cu. yd. of mass concrete were placed.

James M. Polatty, concrete engineer for the corps at the project, reports these characteristics of the device:

It indicates a change in aggregate moisture in time to make a correction either on the same batch or the following one. Its measure of workability is more dependable than an inspector's opinion, and superior to a wattmeter or a slump test. It shows a variation in water-batching sequence. It indicates workability of the mix at various mixing times. And it works as efficiently on a 6-in. maximum size aggregate as on 3-in. or 1½-in.

Some of the disadvantages include: Difficulty of reading the meter chart; at times this is due to a wild 6-in. stone striking the reaction blade. The meter reading changes with aggregate gradation variations. And the meter will not operate at all in rain and not too well in damp weather. This last probably can be corrected.

The plastograph—invented by Glenway Maxon, Milwaukee, Wis., engineer—consists of a small, V-shape bucket placed inside the mixer and a series of electrical contacts, called probes, on the outside. These are placed along the circumference but at slightly different distances from the mixer axis. Pressure of the concrete during mixing tilts the bucket, which in turn rotates an external arm sufficiently to brush against the probes. Contact is recorded on a chart, the last contact to register being a measure of the workability of the concrete for that revolution of the mix.

The mixer used in the tests has a new-type 3-unit mixing blade, with both charging and discharging paddles extending well across the center of the drum, eliminating the old-type cross bar. Concrete flowing through a gap between the charging and discharging blades impinges on the reaction bucket, which is mounted on a shaft parallel to the mixer axis. As the bucket tilts, its shaft rotates the external shoe that makes electrical contact with the eight probes.

The tests were conducted under the direction of J. R. Gilbert, Corps of Engineers, Washington, D. C., with the cooperation of National Constructors, Inc., general contractors on the Allatoona project (ENR July 21, 1949, p. 35).

Study Domestic Clay As Concrete Mixing Material

The U. S. Bureau of Mines is currently investigating the use of domestic clays in the production of light, durable aggregates for making concrete. The move is part of a long range program aimed at providing America's expanding building industry with new sources of lightweight construction materials.

The study is being carried out at experimental stations at Tuscaloosa, Ala., Norris, Tenn., and College Park, Md.

Experimental work at the Tuscaloosa station consists of research on the so-called "bloating clays"—clays that expand upon being heated to a required temperature. Tests have been made at Tuscaloosa on specimens from many localities, including Alabama, Arkansas, Florida, Georgia, Louisiana, Oklahoma and Texas.

At the Norris and College Park stations, bureau scientists are currently investigating waste shales from coal mines.

Preliminary test results here show that in many cases the coal mine shales are suitable for rotary kiln production of lightweight aggregate.

Development of special finishing techniques for floor slabs and . . .

Extra care in placing are two of the major considerations in . . .

Use of Lightweight Concrete In Los Angeles Buildings

Murray Erick
Consulting Structural Engineer
Los Angeles, Calif.

LIGHTWEIGHT pumice concrete was used in two recently completed major buildings in Los Angeles. It made possible large reduction of mass and associated economies in the building frame.

Design features for the Prudential Building were described in ENR March 31, p. 41. Similar materials, with the resulting weight-saving, were also used for the General Petroleum Building.

The buildings are similar in that they were designed by the same architect-engineer combination, were built concurrently and have almost equal floor areas—each about 500,000 sq. ft. Yet they differ sufficiently in design and in construction methods to provide information of a rather wide range concerning the application of lightweight concrete to buildings.

A few general comments relative to lightweight concrete are in order:

When this material is used in structures, much of the characteristics attained depends upon the type of aggregate. For example, in pumice mixtures such as were used in the Los Angeles buildings, a major point in control is the manner of adding water and its effect on mixing requirements. If the porous aggregates are fully saturated when batched, it is mainly a question of a full specification mixing period and the production of satisfactory consistency and workability. If the aggregates are only partly saturated, a procedure must be worked out to give equivalent results; for example, the lightweight aggregate may be loaded with a part of the mixing water, and after a definite period of mixing, the remaining materials may be added to complete the batch.

In either case, the same result is demanded—a concrete with minimum slump, consistent with placement conditions, that will also remain workable during the placing operations. Special attention should always be given to the design of mixtures for unusual placing conditions, so that the problems arising in the field may be minimized.

Specifications for all types of concrete usually require concrete in walls to be placed through elephant trunks in horizontal layers of moderate depth. This procedure is even more important when the concrete is lightweight. To promote uniformity of distribution, it is suggested that trunks or tremies be placed about 12 ft. apart along the wall to be poured. Delays involved in moving equipment are usually more costly than provision of adequate equipment.

Some problems also arise in connection with the finishing of lightweight concrete floor slabs. It seems advisable to adapt the finishing procedure to the particular characteristics of the concrete. On one job it was found desirable to use a dust-on of cement and natural sand to facilitate troweling. On another job, compaction by power float gave satisfactory results. Further experience with each aggregate is needed as a basis for definite recommendations.

Considering the variables involved and the lack of wide experience with lightweight concrete, it seems evident that the design of lightweight concrete mixtures should be entrusted to trained technicians and the plant and field control should be continu-

ously in their hands. Under such control of proportioning, handling and adjustment, it may be expected that a uniform, workable, satisfactory concrete will be produced.

Buildings have different plan

Both the Prudential and Petroleum buildings are of structural steel frame, with monolithic light concrete floor and roof systems and concrete wall construction, with the exception of the lightweight gunite spandrels on the three street front walls of the General Petroleum Building (picture shows back wall where lightweight concrete spandrels were used).

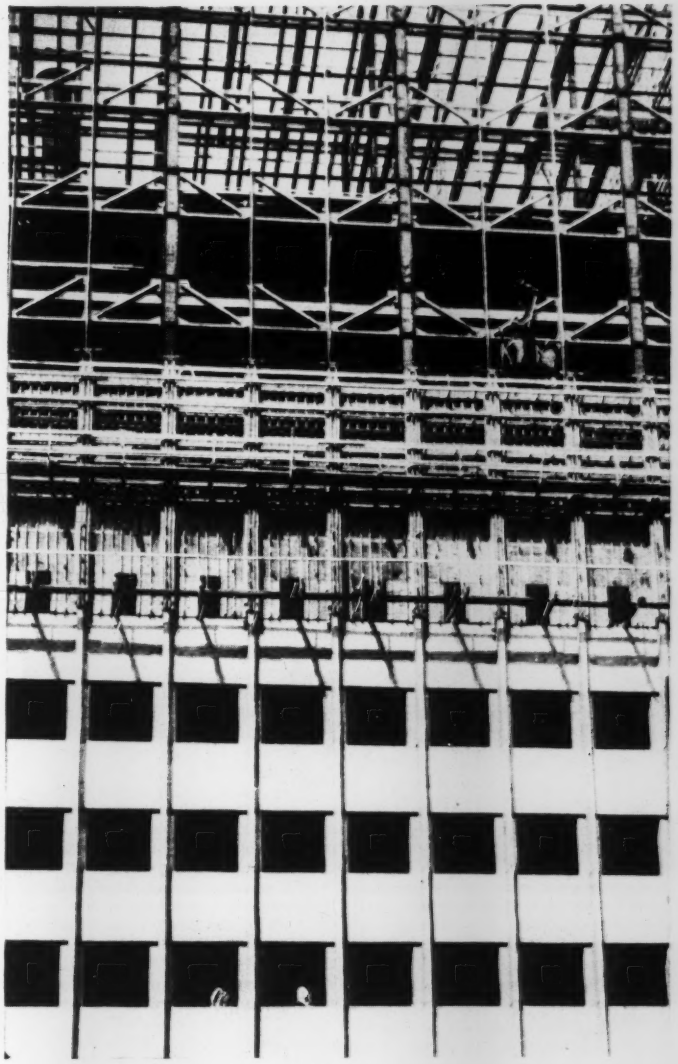
The resulting gunite is generally a 2-in. thick envelope completely surrounding the spandrel trusses as fire protection and also as structural filler wall and backing for architectural facing.

The spandrels of the east wall of the General Petroleum Building are architectural cast-in-place concrete 4 in. in thickness, with 2-in. gunite fire protection on the inner face of the spandrel trusses. The court walls are exposed monolithic concrete filler walls of 6-in. thickness. The pumice lightweight concrete used for the solid walls mentioned, for the floor and roof slabs, and for fireproofing primary beams and columns totaled 11,200 cu. yd. of lightweight concrete. Some 1,000 cu. yd. of fine aggregate concrete applied through the cement gun was used.

Although the General Petroleum Building is symmetrical in plan and uniform in height, the Prudential Building is very irregular in plan, with a central height-limit tower and adjoining sections of variable sizes and heights. All exterior walls and shear walls at junctions of the various sections of the Prudential Building are of solid concrete, generally 6 in. in thickness. The lightweight pumice concrete used for these walls, all floors and roof slabs, and for the fireproofing of primary beams and wall columns amounted to 14,500 cu. yd.

Concrete mixes tested in lab

Since both projects were developed by the same designers and large expenditures were involved, a laboratory investigation of lightweight concrete was made in advance of the work. This program, conducted by Smith-Emery Co., included tests of concretes made with four lightweight aggregates and three admixtures. The testing laboratory found it desirable from previous experience with lightweight concrete mixes to use a type of admixture that would reduce water requirements and bleeding and improve workability.



LIGHTWEIGHT CONCRETE PANELS form the Petroleum Building back wall.

The specification for lightweight concrete provided: (1) the aggregates should meet ASTM standard specification for lightweight aggregates, except for gradings, (2) the resulting concrete should develop a unit compressive strength of not less than 2,500 psi. at 28 days and (3) the concrete should have a dry weight not to exceed 95 lb. per cu. ft.

The laboratory's testing program was set up to work out the following properties of the concrete: Cement content per cubic yard; water-cement ratio; workability; segregation; compressive strength, 7 and 28 days; weight per cubic foot; modulus of elasticity; shrinkage total inches per inch; absorption percent; modulus of rupture; bleeding; and bond strength for vertical bars, bottom horizontal bars and top horizontal bars.

Because of the variability of lightweight aggregates from various sources

over the country, accurate detailing of the results of tests of these particular materials will not necessarily furnish a proper guide for the use of other aggregates, nor is it reasonable to give in full detail the results of a costly test program made for a specific use. The description of mixes determined by test to fulfill the requirements for lightweight concrete designated and used in the design and construction of these buildings can, however, be stated in general terms. (See table.)

On the basis of pricing, availability and other considerations, both contractors chose to use pumice aggregate for all lightweight concrete. In all of the pumice concrete, natural washed sand was blended with the lightweight aggregate.

The design of mixtures in the testing laboratory was made on the basis of thoroughly-saturated, surface-dry aggregate and calculations were based on absolute volume. Continuous control at the plant and in the field made it possible to consistently produce concrete of the desired quality and characteristics.

For the materials making up this aggregate combination, unit weights of concrete suitable for structural purposes will be between 75 and 105 lb. per cu. ft. Through this range of dry weight, the proportion of natural sand to total aggregate by absolute volume will vary from zero to 44 per cent. The cement factor will vary in an inverse ratio with unit weight for any given strength since an increase in the proportion of natural sand will increase unit weight but will lower the corresponding cement requirement.

The gunite mixture was 1 part cement to 4½ parts lightweight aggregate manufactured by burning a shale material. The aggregate had a maximum size of ¼ in., the concrete had a minimum strength of 4,000 lb. per sq. in. and a unit weight (dry) of about 105 lb. per cu. ft. The cement content for this mixture is in the range of 7.0 to 7.5 sacks per cu. yd.

Producing the concrete

The actual production of the pumice concrete for both buildings was a transit-mix operation, but there were substantial differences in the methods used. This is most apparent in the location of facilities for storing and batching the lightweight aggregates.

Since the General Petroleum Building is in the main business district and space for construction work is severely restricted, the handling of aggregate and proportioning of concrete was done at Vernon, about six miles away. On the other hand, plenty of area was available adjacent to the Prudential Building site to allow establishing a storage yard and proportioning plant close to the building.

MIX DATA FOR LIGHTWEIGHT CONCRETE AS USED IN LOS ANGELES BUILDINGS*

Water-cement ratio	6.25 gal. per sack
Compressive strength	2,500 psi. min. at 28 days
Cement Content (approx.)	7.0 sacks per cu.yd.
Consistency (in walls)	5½ to 6½ in. slump
Consistency (in floors)	4 to 5-in. slump
Unit weight (after drying)	90 to 95 lb. per cu. ft.
Aggregate: Coarse	No. 1 grade pumice is graded 1 in. to No. 8 mesh
Fine	No. 3 grade pumice is graded ⅜ in. to No. 200 mesh
Sand	Natural Washed Sand
Admixture	The equivalent of 0.4 lb. plasticizing admixture per sack of cement

* General Petroleum and Prudential Buildings.

For the Prudential project, an area 300 ft. square was graded for drainage and a two-inch surfacing applied. A batching plant was erected, and pumice aggregates were delivered by truck to this yard for stockpiling. On the paved area, separate stacks of the fine and the coarse aggregates were built up in flat piles to maintain an even grading and to facilitate thorough saturation. The application of water was carried out by means of pipe lines with nozzles delivering a spray uniformly over the piles, which permitted loading the batching bins with thoroughly saturated aggregate.

The concrete batches were delivered to the truck mixers, where water was added and the load hauled to the elevator tower. Since the haul was in general less than 500 ft., much of the mixing was done in standing time.

For the General Petroleum Building, aggregate batching was done by the pumice-aggregate supplier because his storage facilities adjoined the concrete supplier's yard.

The pumice aggregate was received in freight cars and wet down by hosing. The coarse aggregate, when thoroughly soaked, was elevated to storage tanks; then, as needed, it was delivered by conveyor to the bins of the batching plant. Fine aggregate was wet down sufficiently to stop dusting, then was elevated to a stockpile storage and drawn off in a moist condition to the batching bins. These lightweight aggregates and the required natural washed sand were proportioned and loaded into the mixer trucks, which then picked up the charge of cement as they passed through the concrete supplier's yard.

Walter Wurdeman and Welton Becket were architects for both of these buildings, and structural plans were prepared by Murray Erick Associates. The general contractors were: Wm. Simpson Construction Co. for the Prudential Building, and P. J. Walker Co. for the General Petroleum Building. Testing and control were performed by Smith-Emery Co., and acknowledgment is made to Dwight F. Roberts of that company for his assistance in assembling the data for this article.

Acid-Proof Porcelain Enamels Resist Weathering

Observations after seven years' exposure of porcelain-enameled architectural panels disclosed no noticeable fading of enamels of high class AA or class A acid resistance, nor objectionable fading of class B enamels. Class C and D colored enamels, however, underwent considerable change.

Good correlation was found between the Porcelain Enamel Institute research test for acid resistance and the percentage of initial gloss retained —The better the acid resistance the greater the retention of gloss.

The study ("Weather Resistance of Porcelain Enamels Exposed for Seven Years," by William N. Harrison and Dwight G. Moore, Journal of Research of the National Bureau of Standards, Jan., 1949) was begun by the NBS in 1939. Panels were exposed at Washington, D. C.; St. Louis, Mo.; Lakeland, Fla.; and Atlantic City, N. J.

At Atlantic City, considerable corrosion took place in parts of the panels that were incompletely covered by enamel, whereas specimens with a thin second-coat of enamel on the back were not so effected. From these observations, it appears advisable to insure complete enamel coverage of attachment lugs and the backs of panels where durability of installed panels is desired.

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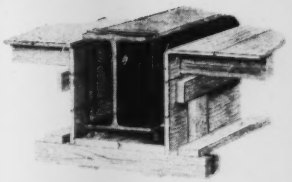

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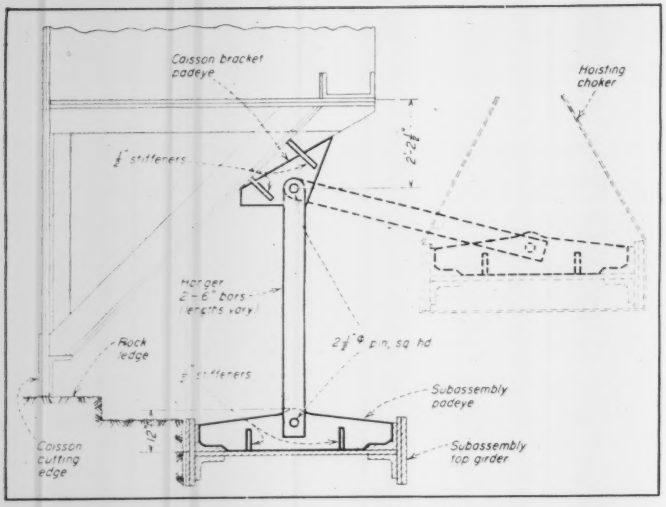


LOAD TRANSFER from crane to caisson. Steel is dropped to dotted position, hanger is pinned to subassembly, then crane lowers away. Hanger pulls steel in under caisson.

Hangers Swing Steel Under Caisson For Brooklyn-Battery Shaft Bracing

George A. Fox
Engineer
Grow Construction Co., New York, N. Y.

ERECTING steel from the top down is a ticklish job under the best conditions. But, in the face of one of the worst situations possible, the Grow Construction Co. used the top-down approach to install rock bracing in the midstream airshaft of the Brooklyn-Battery tunnel; the tough assignment was to set the top ring of bracing assemblies underneath the edge of a caisson that already had been sunk 70 ft., through mud to the rock. A hanger, pinned at one end to the caisson and at the other end to a steel subassembly, was the tool of success.

Ordinarily the contractor would have excavated the rock first (to 149 ft.), then placed the invert and erected the steel. On this job he figured that by doing the top half of the job in reverse, he could not only expedite the work but also throw in an extra element of safety, by supporting the rock as soon as it was exposed.

The shaft is just off Governors Island in upper New York bay, about halfway between the Manhattan and Brooklyn tunnel portals (ENR March 17, 1949, p. 125). Rock excavation measures 47x107 ft. in plan, the long dimension (east-west) transverse to two-lane tunnel tubes, which run roughly north and south.

Shaft construction

Work began with the construction of an artificial island. A 2000-ton hollow-walled steel caisson filled with 5,500 cu. yd. of concrete was sunk 70 ft. to rock by open dredging, assisted by jetting. Under compressed air, the rock was excavated for an average depth of 7 ft., and the caisson was dropped, in 18-in. stages onto the rock ledge, where the seal was made. Excavation of the rock shaft then proceeded in free air.

The two tunnel headings already had been carried underneath and beyond the shaft. Hence, the first phase of the rock shaft excavation after the caisson had been sealed to the rock, involved breaking a hole through the roof of rock over the headings, and then enlarging the opening to the size of the shaft by shooting the rock down into the tunnels.

The contractor's observations of the rock (Manhattan schist) showed numerous areas of disintegration between seams and between vertical foliation planes. This condition, coupled with overbreakage at the tunnel portals extending back under the caisson's cutting edge, gave rise to serious concern by the contractor over the safety of proceeding with the shaft excavation without following in close order with some form of heavy bracing that could restrain the sides of the shaft against a large rock fall. Should such a rock fall occur, it was considered that the loss of the seal would be likely, and the entire shaft operation would be placed in jeopardy.

The permanent steel bracing for the rock shaft appeared to be the ideal means of bracing the sides of the rock shaft. This steel could be used only if it were suspended from the caisson.

Design considerations

The design problems involved in such a scheme centered on four main questions:

1. By the nature of its connections, could the shaft steel, which already had been fabricated, be erected inversely for the top two belts, and then erected right side up for the balance (three more)?

2. Were the various connections and members of the shaft steel capable of transmitting at safe stresses, the tensile loads caused by the weight of the hanging steel?

3. Were the brackets at the cutting edge of the caisson and the connections of the brackets to the caisson capable of carrying a downward concentrated load applied eccentrically?

4. Could hangers and padeyes be designed and detailed so as to insure that the many milled connections between subassemblies could be brought to bear and the rivet holes made fair?

Investigation of each of these questions led to the conclusion that it was safe and practical to proceed with the hanging method.

The brackets at the cutting edge of the caisson (see drawing) provided supports at closely spaced intervals for a system of 34 hangers, which were designed to carry the weight of the steel, plus allowances for unequal loadings and for impact during the erection or as a result of blasting.

The line drawing also shows details of typical padeyes, brackets and hangers that carry the shaft steel.

Inasmuch as the caisson at rest was tilted slightly about both axes, and since the shaft steel had to be level, the length of hangers varied from point to point. Using data on cutting edge elevations, together with

details on the contract plans and details of the padeyes, the length of each hanger was computed.

The caisson-bracket padeye was detailed so that there was only one position on the bracket in which the padeye could fit. Thus field measurements were eliminated and the welder couldn't make a location mistake while working in an awkward position under the caisson. This made for a somewhat over-strong padeye, and also made for additional field welding. However, the detail was worthwhile because it insured correct line and grade for the top padeye holes, an absolute necessity to correct steel erection. The padeye on the top-belt shaft subassembly were welded downhand, above ground, before the subassemblies were made up.

Erection procedure

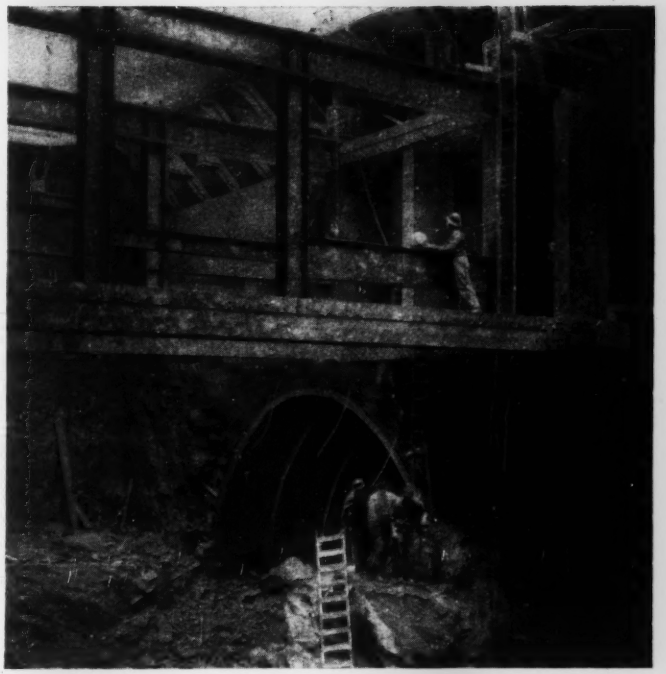
Subassemblies were made up on the ground with the hangers pinned off in the padeye holes.

Each subassembly was lowered into the shaft to a position immediately alongside its final position, it being impossible, due to the overhang of the cutting edge girder of the caisson, to lower the subassemblies directly into place. The hangers then were pinned to the caisson padeyes, and as the derrick slacked off its load line, the hangers picked up the load and carried the subassembly in sidewise under the caisson.

Pairs of flat bars were the hangers on the sides that interseeted the tunnel tubes (north and south). On the other (east and west) sides, 2½ in. turnbuckles were used temporarily. This was necessary in order to clear upstanding flanges of the tube-side subassemblies, which already were in place. The east (or west) subassembly was pulled in sidewise by the turnbuckle hangers, at about 14 in. above final grade, in order to clear the flanges; then the subassembly was lowered on the turnbuckles to grade, pinned off to its connecting subassemblies on the north and south, and the permanent two-bar hangers were installed.

Thus the hanger was especially useful, not only as a support, but as an erection device for swinging the subassemblies under the caisson.

Four of the 34 hangers used—two in the east and two in the west—were slightly loose after being pinned off. All other pins had to be driven in with a sledgehammer. The loose hangers were made tight against the pins by heating the hangers to a bright red in the central 6 inches of each bar, and then applying a quick quench with water. By so doing the hanger straps were given a shrink fit against the pins.



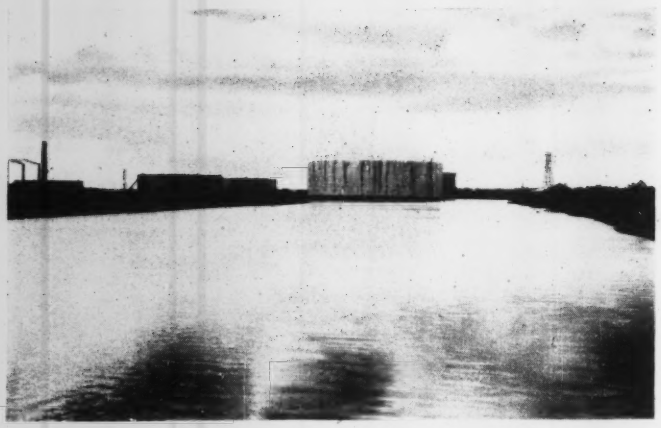
FIRST SUBASSEMBLY (four vertical and two horizontal members adjacent to rock face) hangs beneath caisson. Bracing steel was bolted to this subassembly and its twin across the shaft after subassembly was hung. Cutting-edge brackets with padeyes for other hangers visible through bracing. (Triboro Bridge and Tunnel Authority Photo).

During erection of the upper two belts of steel, rock-shaft excavation continued. By the time of completion of the rock excavation the two upper belts of steel were completely erected, bolted up, and partly riveted, and the lower belts of steel in the east half of the shaft were about half erected.

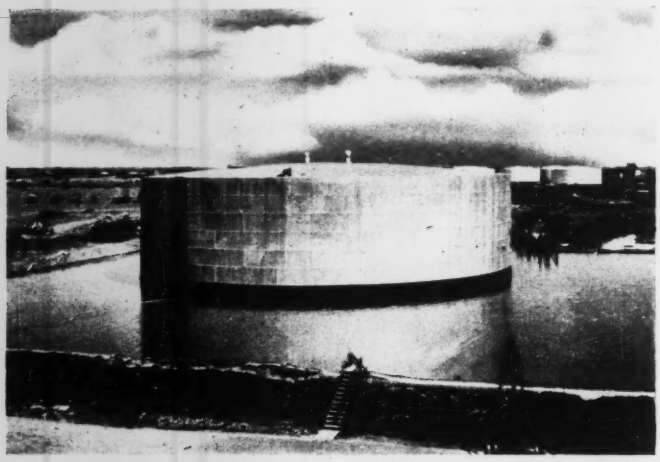
The balance of the shaft steel was erected from the bottom up, piece by piece, on timber blocking. Main columns, which frame the tunnel portals, were continuous from the bottom of the shaft up to the second belt of girders. When these columns were made up to the hanging steel and plumbed, line and grade for the remaining pieces was automatically determined by fairing up to the shop rivet holes. Here, too, the hanging steel served usefully, as support for temporary slings that operated in much the same manner as did the steel hangers, to swing pieces into place under the caisson.

About 1200 tons of steel were erected and suspended from the hangers before the first section of the invert slab was poured, and except for a few pieces, the entire shaft steel was erected by the time the invert slab was completely waterproofed and poured. The invert slab was poured in five sections, and the timber blocking under the bottom girders of the shaft steel was removed as required. This blocking was primarily a psychological support after the lower steel had been bolted and riveted to the suspended steel.

Robert Goodman, secretary of the Grow Construction Co., New York, who was in overall charge of the job, conceived the idea of the hanging method and proposed it to the Triboro Bridge and Tunnel Authority, owner. The writer designed the system of hangers and did the engineering for the project. Peter Ullstrom was the steel superintendent in direct charge of the erection. Also, Luke White was general superintendent and Eugene F. Gibbons, field engineer. John C. White is section engineer for the owner; Ralph Smillie, chief engineer. The Bethlehem Steel Co. fabricated the shaft steel and the New York Engineering Co. fabricated the components of the hangers.



Oil Tank Floats From There . . .



. . . To Here in Moving Operation

MODERNIZATION and expansion planning for the Shell Oil Co.'s Montreal East Refinery recently dictated the moving of a 5,000,000 gal. oil storage tank a distance of 618 ft. from its original site.

But the problem of moving and raising a riveted tank 144 ft. in diameter and 40 ft. 6 in. high, weighing 850,000 lb., a distance of more than three blocks, was no simple one.

After considerable investigation of the tank and conditions of the level area across which it needed to be moved, engineers decided that the most economical method would be to float the tank to its new station.

The new position, in addition to its distance away from the original site, was 3.15 ft. higher in elevation, and the proposed orientation of the tank meant that the structure had to be rotated 90 deg. from its original position.

Engineers for the Fluor Corporation, Ltd., working with engineers for the Shell Oil Co. of Canada, Ltd., decided that the tank could be floated, and that the stresses introduced would not be detrimental or result in permanent injury to the structure. Submergence, stress and deflection calculations were at little or no variance from actual conditions observed during the floating and resettlement. No internal bracing or strengthening was considered necessary.

The floating operation was simply done.

An earth dike was built to create a reservoir. Before the reservoir was filled, the rock and stone dust-pad under the bottom of the tank was jetted by high pressure water to minimize impact and high stress concentrations when the tank finally broke loose from its base and assumed its floating position.

About 9,500,000 gal. of St. Lawrence River water was pumped into the reservoir. Throughout the operation, eleven large portable pumps were kept operating to replace water being lost by percolation.

When the water level reached 24 in., the tank rose slowly from its foundation and floated evenly, drawing 21.5 in. of water—1½ in. more than calculated. Pumping continued and the tank was anchored over its base for three days until sufficient clearance was gained to permit moving it over the new base at the higher elevation.

When the water level was high enough, the entire turning and pulling operation took only about 2½ hours.

The tank was then sunk and came evenly to rest two hours later in its predetermined location.

Deflection of the bottom under load was as expected. The center column was 8 in. above the normal 6 in. crown height, while the bottom plates between columns did not exceed their yield point. The maximum stress occurred around the periphery at the junction with the shell. Well away from the shell, one small crack, 5 in. long, occurred in an apparently defective lap weld. It was temporarily caulked with lead wool pending final repair. This was the only leak during the total five day floating operation.

The maximum bow observed in the roof columns was 1½ to 2½ in. After the tank was placed on its new foundation, the columns returned to normal.

While afloat, the upward deflection of the roof introduced compressive hoop stress in the top ring angle of the shell similar to that experienced on breather roofs under excessive and continual movement. The calculated reduction in diameter of the top was 1.54 in., compared to an observed reduction of about 2 in. With the exception of a few localized areas, the top ring angle went back into position after the roof lowered.

Underpinning Saves Bridge Pier Threatened by Slide

Traffic flow was restored recently on Summit Bridge near Chesapeake City, Md. after a three-month shut-down during which the north abutment, which was threatened by a serious slide, was saved.

Heavy rains had washed out much of the bank on which the pier rests, rendering unsafe the 598-ft. crossing of the Chesapeake and Delaware Canal.

The vertical-lift, through-truss structure is situated in Delaware, five miles east of Chesapeake City, and joins banks 80 ft. above mean low-water in the canal. The restored pier was on a spread footing and the slide caused its top to tilt 6 in.

First effort to save the bridge was removal of the earth embankment behind the abutment. Its removal—the leveling of a sizeable area back of the pier—somewhat lessened the thrust acting in the direction of the canal.

However, although 20,000 cu. yds. were excavated, the slide continued and the Corps of Engineers, Philadelphia district, had to do an underpinning job.

A concrete deadman, measuring 4 x 4 x 40 ft., was buried 50 ft. back from the pier. The bottom of the pier was tied back to this with 1¼ in. wire rope.

A well-point system of thirty-seven 2-in. dia. pipes with screen filters was installed to a depth of 20 ft. to drain off ground water from the area surrounding the abutment.

Underpinning procedure

Underpinning began with the driving of 16 steel "piles," (14 WF 89) 80 ft. long. These were driven to a bearing capacity of 60 tons as computed by the ENGINEERING NEWS formula. A steel grillage was then constructed to transfer the load of the concrete pier to the piles. Main support members of the grillage are 36 in. WF beams, each weighing 245 lb. per foot.

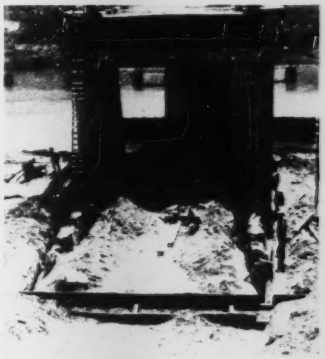
Notches 14 in. deep and 4 ft. high were cut in outsides of the two shafts of the concrete pier. Filled with reinforced concrete the notches became shoulders which rested on the main support beams of the underpinning grillage. Horizontal thrust in the transfer notches was taken by four 2¼ in. round tie rods, prestressed to 35,000 lb. each.

With the abutment secured, the approach span was jacked up about 10 in. to correct its position and thus take the tilt out of the bridge deck. Six hydraulic jacks of 100-ton capacity were used—three at each shoe. Concrete pedestals were poured after the bridge was jacked up to grade; new expansion rollers were reinstalled, and the jacks were removed.

Where the embankment had been excavated, a new timber approach trestle was constructed. Timber bents on concrete sills carry a 24-ft. wide roadway with a 5-ft. sidewalk on its east side.

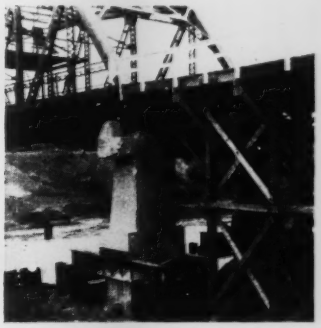
Col. Frederic F. Frech, Philadelphia district engineer for the Corps of Engineers, supervised design and construction of the entire project. Howard, Needles, Tammen and Bergendoff, New York engineers, were consultants. Piledriving, underpinning, and jacking operations were done by Merritt, Chapman & Scott, New York.

1 RAINS WASHED OUT embankment in front of the abutment pier.



2 A DEAD MAN was buried to hold the pier from sliding any further toward the Chesapeake & Delaware canal.

3 STEEL PILES were driven 80 ft. down and a grillage underpinning was built to transfer the load from pier to piles.



4 NEW TIMBER APPROACH was constructed after the pier had been secured and the bridge jacked up to grade.

How New York Handles Public Housing

Editor's Note: Planning, financing and construction techniques used by New York City for public-housing projects that may in the near future shelter a half-million people were outlined by Thomas F. Farrell, chairman, New York City Housing Authority, (see also p. 14 this issue) in a speech at the annual meeting of the Metropolitan Housing and Planning Council of Chicago. What he said may guide other cities planning programs to take advantage of the recently-passed federal public-housing law.

THE SENATE debate on the housing bill was dramatized by the visit of a group of senators to a Washington slum, almost next door to their office building. They were shocked that such squalid conditions should exist in the heart of the national capital. But similar slums exist in New York, in Chicago, and in practically every large city in the country. What is really shocking is that they should exist at all.

The United States has the resources and ability to insure adequate and decent housing for all its people. But the task is not simple. It involves technical and economic factors of the first order, and there is no magic formula for getting enough decent housing for all at prices they can pay.

Any solution of the housing problem must draw largely on the initiative and efforts of private enterprise. The private builder must supply the bulk of this country's housing. Public housing will not provide more than a small part of what is needed.

But public housing must yet play a vital role. Its job is to meet the need that the private builder cannot fill.

Huge program planned

Here is how New York City has tackled the job: Since the beginning of 1946, 39 public-housing projects were built or started in New York City. Eight are temporary projects for veterans, and they eventually will have to be replaced. The others are solid permanent projects that will provide decent housing for a long time to come.

The city now has on hand an un-

JOHNSON HOUSES — public-housing project in Manhattan for 1,310 families—incorporates recreational facilities.

precedented program — the largest single permanent housing program ever undertaken in this country. With the new federal program, plus new state housing funds to be voted on this fall, the city should build about 80,000 apartments beyond everything now scheduled. That will give a total post-war program of almost 130,000 permanent apartments—housing for half a million people.

City's credit backs bonds

The New York State constitution permits cities to use their credit for housing purposes. New York City may assume a housing debt equal to 2 percent of the average assessed valuation of its taxable real estate over the preceding 5-yr. period. In round figures, the city may provide financial backing for something over $300 million worth of housing.

The city has built three projects without outside aid, using funds from the sale of Housing Authority bonds, and has subsidized them with the proceeds from a tax on commercial establishments. In addition, under the provisions of the state's Public Housing Law, the city matched dollar-for-dollar all state subsidies to state-aided projects.

These fully subsidized public-housing apartments rent for about $8.50 to $9 a room a month. The private builder, saddled by high postwar costs, is building apartments renting for $25 a room and up. Caught in the middle is the family that can afford more than the very low rents of fully-subsidized public housing, but which finds even the lowest of the new private rents out of reach. To meet their need, a program of housing without cash subsidy was developed.

Here are its essentials: The housing is built with money raised by the sale of Housing Authority bonds guaranteed by the city. Because of the guarantee, the authority can borrow the money at a low interest rate. Partial tax exemption is granted, taxes being paid only on the value of the property at acquisition, not on improvements. The loan has long-term amortization. The housing has only to break even, not make a profit. All these savings are reflected in the rents, which are set just high enough to pay the full costs of the housing, including debt service. No cash subsidy is required.

Twenty projects are scheduled under this program; 16 are already under construction. Apartments will rent for an average of about $16.50 to somewhat over $17 a room a month including gas and electricity. These are not "cheap" rents. But they are considerably below the rents for new private apartments in New York, and they meet an urgent need that would have been neglected otherwise.

How slums are cleared in shortage

The direct slum-clearance program has not been by-passed. Building projects are being built on slum sites. The relocation problem has been attacked and some answers found that will be of great help in the big program ahead.

One answer is to build projects in sections. The old buildings on one part of the site, repaired as necessary, serve as a kind of relocation reservoir for the first section. Later, the new apartments of the first section are used to help clear the remainder of the site.

Another answer is to rehabilitate boarded-up tenements and use them for relocation of site tenants. It is not too satisfactory, because it uses up permanent housing funds, but it has made possible the moving from the sites of the last remaining tenants who could not otherwise be relocated.

The best way to illustrate what is required to keep a program as large as New York's moving is to give an example of the steps taken in developing a single project. They are many and varied, for the planning and building of even one large-scale housing project is not a simple job.

Planning steps taken

When the site has been chosen, preliminary plans are submitted for approval to the City Planning Commission and the Board of Estimate, who hold public hearings. Conferences are held at each step with the lending agency involved to make sure that the project has at least informal approval. It is a lot more practical method of working than waiting until the plans are complete and then having them turned down.

As soon as the preliminary plans have been officially approved, steps are taken to acquire the site—generally though condemnation proceedings—and architects are engaged to draw up detailed plans. To speed up the architectural planning—generally the most time-consuming operation in the planning sequence—the authority's planning staff sets up certain standards for the architects to follow. Originality in design is encouraged, but the types of materials to be used, window sizes, and distribution of apartments by size are specified.

The entire construction process is geared to mass-production methods to the extent they can be utilized in residential building. Before a contractor is permitted to bid, he must be prequalified. Pre-bid meetings are held with all interested contractors to make certain they know exactly what they are bidding on and exactly what is expected of them. These methods enable costly "extras" of construction to be cut to an almost unprecedented minimum.

The use of standard materials and specifications is a tremendous factor in both economy of time and money. Repetition of the design element within a project brings about a similar savings. Extensive use is made of controlled concrete because experience has proved its worth. For one thing, so good a surface is obtained that it is not necessary to plaster the ceilings of the apartments.

[Contract awards by the Housing Authority recently averaged $1,900 to $2,600 per room, about $1 per cu. ft., (ENR, March 17, p. 203)—Editor]

About three months before a project is ready, applications are taken for apartments. The information on the preliminary application is coded and translated onto I.B.M. cards, which bear only a number, not the applicant's name. Selection is made according to relative need based on the present housing conditions of the applicant, his income, the size of his family and related factors. All applicants must, of course, be interviewed, and their living conditions investigated by specially trained staff members. Finally comes moving day, and a new project is opened.

Coordination essential

Top city officials must have complete understanding and sympathy with the program. Anyone of them can legally throw a monkey wrench in the works. The best way to get things done is to sit down in advance with the people concerned and get problems thrashed out before official papers are executed. A long exchange of letters and memoranda is little more than writing exercise—it won't build housing.

In anticipation of the new federal program, New York City is preparing a shelf of projects that can be started as soon as the necessary preliminaries are cleared with the Public Housing Administration and the go-ahead is given. In the first years, a considerable part of the program will still have to be on vacant land, but in the long run, the bulk of the housing built will include slum clearance. Preliminary study has been undertaken of 57 suitable sites, 16 of them vacant land.

The new federal bill gives hope of real and continued progress. Apart from its public-housing section, its slum clearance provisions, though yet untested, are a great step in the right direction.

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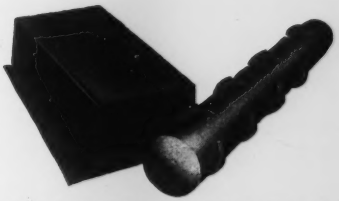

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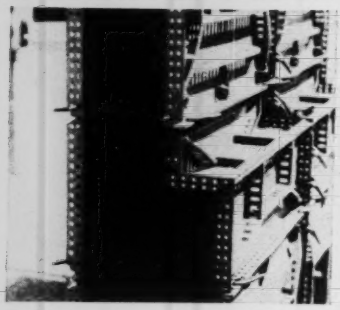

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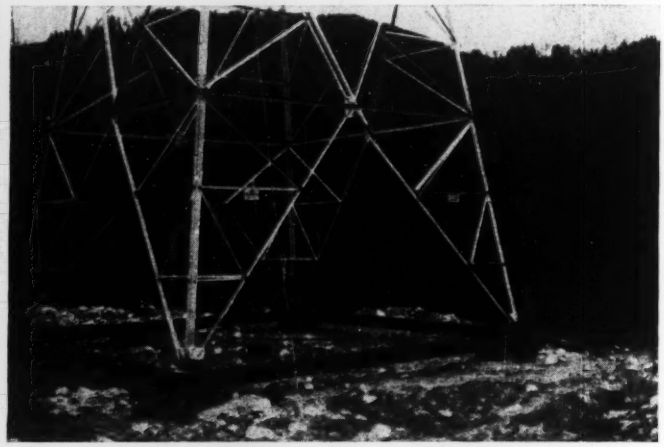


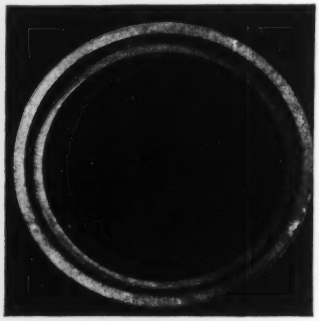
BEATING SHIFTING GROUND—To cope with shifting footings, Bonneville-Grand Coulee transmission line towers are placed on special footings. Guy wires hold tower on the footing and compensate for twisting motion.

Movable Tower Footings

Moving ground along section of the Bonneville-Grand Coulee transmission line has resulted in the placing of some of the towers on "movable" footing. Towers are erected on skids formed of 12x12-in. timers and steadied by eight guy wires. Some of the original towers have moved as much as 10 ft. out of line without causing any difficulty. However, when the movement is a twisting one (as much as 20 deg.) damage has resulted.

Towers are mounted on a square frame of 12x12-in. timbers. This is placed on pairs of 12x12-in. timbers tamped into the ground at each corner. These timbers are lined up at right angles to the transmission line and in the direction of probable movement.

The tower is held on the footings by means of eight guy wires—two on each corner of the tower. If movement occurs, it is compensated for by tightening and loosening appropriate guy wires. In case of significant twisting movement, the 12x12 skid timbers would have to be moved too. If the movement continues for too great a period of time, it is planned to use tractors to pull the towers back to their original position.

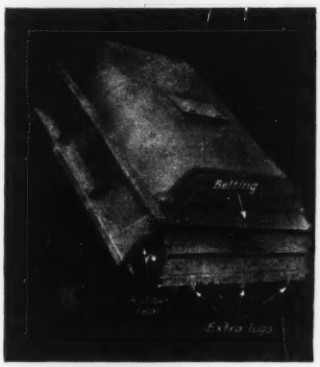


SURFACING SAVER—When Muscatine, Iowa, prepared to complete a large amount of street surfacing, Walter Molis, superintendent of water distribution, worked out a method of placing new manhole covers to save adjusting valve boxes to the new level. Using a cover and rim manufactured by the Carver Pump Co., of Muscatine, city workers determined the center of the old 8¼-in. dia. valve boxes, laid the new 13-in. dia. rim on it, cut out the new pavement to fit, and placed the covers on top.

ONE MAN drills 50 ft. of drainage hole in an hour into railroad embankment.

Auger-Driven Drain Holes

When the Southern Pacific Railroad sought a cheap means of draining embankments that were unstable because of entrapped water, one answer was to bore holes and install perforated liners. With the air-operated auger machine illustrated, they could drill holes on a slight incline, as far as 200 ft., at a rate of 50 ft. an hour. Bored and reamed diameter of 4½ in. made it easy to shove 4-in. liners into place.



Job Made Dump Truck

Job-made, 1-½ ton dump trucks were used effectively to haul cement from the siding silos to the mixing plant at Allatoona Dam in Georgia.

Tanks were made from a conventional steel dump bed, with a steel turret welded on top. A hatch was cut in the top for loading.

The dump gage remained unchanged, except that extra clamps were placed at the bottom to prevent leakage of the cement. A ⅝ in. rubber seal was placed all around the opening for the tail gate, and a piece of heavy belting was fixed to the turret top to lap over the hinged end of the tail gate as a leakage preventer.

The trucks were able to make two loads an hour, with 27 barrels of cement—unloading two cars in 8 hours.

Which would you rather lose—property dollars or income dollars?

If disaster shuts down your operations, you will suffer an income and a property loss. You need protection against *both!*

Property insurance alone won't protect you against loss of income, but Hartford's Business Interruption Insurance can do just that. If fire, storm, or other hazards insured against, force you to suspend operations, Business Interruption Insurance can protect you against loss of anticipated earnings.

Business Interruption Insurance can give you *just what your business itself* would have given you if no interruption had occurred.

Here, briefly, is how Business Interruption Insurance protects you:

BUSINESS BALANCE SHEET FOR ONE MONTH

Before Fire

Sales	$30,000
Cost of Merchandise	18,000
Gross Profits	$12,000
Expenses	10,000
Net Profit	$ 2,000

After Fire—WITHOUT Business Interruption Insurance

Sales	None
Cost of Merchandise	None
Gross Profit	None
Expenses continuing during shutdown	$ 7,000
Net Loss	$ 7,000
Add. Anticipated Profit Prevented	2,000
Total Loss	$ 9,000

After Fire—WITH Business Interruption Insurance

Sales	None
Cost of Merchandise	None
Gross Profit	None
Income from Business Interruption Insurance	$ 9,000
Expenses which continue	7,000
Net Profit	$ 2,000

(Same as was anticipated had no interruption occurred)

Hartford's Business Interruption Insurance is adaptable to almost any business enterprise; stores, factories, garages, theatres, hotels, etc.

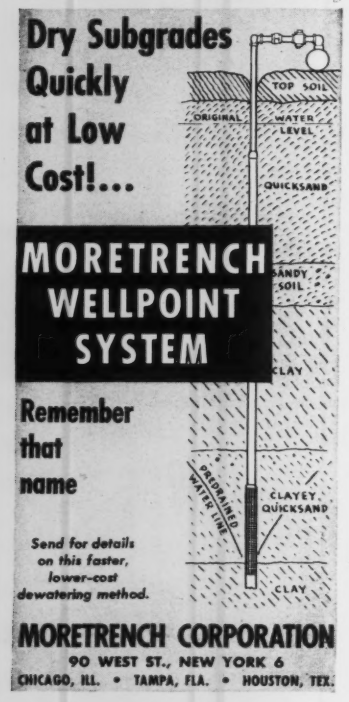
The Hartfords have prepared work sheets to help determine how great a loss you might suffer and how much insurance you will need to safeguard your income. Write for them—there's no obligation!

HARTFORD

HARTFORD FIRE INSURANCE COMPANY
HARTFORD ACCIDENT AND INDEMNITY COMPANY
HARTFORD LIVE STOCK INSURANCE COMPANY
Hartford 15, Connecticut

Year in and year out you'll do well with the Hartford

This TECO
TIMBER JOINT
does more
costs less
Consult us on your timber design problems. We have 250 free typical designs of light and heavy frame timber structures for use as guides by engineers and architects.
Prompt shipment of Teco split rings, shear plates, toothed rings, grids and Trip-L-Grip framing anchors. Distributors and fabricators in principal cities.
TIMBER ENGINEERING COMPANY
Washington
Chicago
New Orleans



UNIT PRICES BID BY CONTRACTORS

Unit prices available on Baltimore paving

As part of an extensive street resurfacing program, the city of Baltimore took bids July 6 on two projects covering 24 city highways. Engineering News-Record will send unit-price tabulations on these jobs to readers on request.

Both resurfacing projects are to be performed by the "Inch" process: 1 in. of asphaltic concrete binder and 1 in. of asphalt wearing course; mostly over existing base.

Baltimore Asphalt Block & Tile Co. was low of seven bidders on one contract, at $120,478. The high bid was $125,472. This work includes 4,875 tons of material in the lower course (including repair to old surface) and 4,075 tons in the upper course. One thousand square yards of old base is to be stripped, generally to be replaced by concrete.

P. F. Flanigan & Sons, Inc., Baltimore, was low of six on the other contract, at $149,996; high was $158,962. This job includes 6,350 sq. yd. of concrete paving 8 in. thick in street-railway areas. Asphalt items include 4,350 tons in the lower inch and 3,150 tons on the surface. Both jobs run 30 days. Wages range from $1.25 to $2.25.

Part of USBR Building let on unit-price basis

Although the bulk of work on Davis Dam's System Dispatcher's Building, to be built 3 miles west of Phoenix, Ariz., is to be done on a lump-sum basis, unit prices were taken on about $8,000 of the $102,000 job. Bids were taken July 8, at Phoenix, and the contract was let to the low bidder the same day. Stewart Construction Co., Phoenix, was low of three, at $102,028. High was $138,042.

Items include 1,900 cu. yd. of excavation, at $1.80; 75 cu. yd. concrete, at $30.00; and 2,000 ft. of embedded electrical metal power system conduit. Contract time is 400 days. All materials are to be furnished by contractor. Wage rates range from $0.975 to $3.34. The building is 75x81 ft. in plan, one story and basement, with steel roof frame and decking on concrete structure.

Minnesota contractor gets Mississippi dam

New London Materials & Construction Co., of Willmar and Minneapolis, Minn., was the successful low bidder on reconstruction of apron and gates for Pine River Dam, near Brainerd, Minn., in the headwaters of the Mississippi River. His bid, $52,356, was the best of eight, the high being $69,779 and the U. S. Engineers' estimate being $42,800.

Work includes removal and replacement of the combination fill and apron structure, and of the timber lift gates, involving an overall area of 150 ft. cross-stream and 65 ft. lengthwise of the stream. Old apron timbers are 4x12's spiked to 8x12 stringers that are drifted to pile caps. In general, pile caps will remain in place. New apron to be of concrete (upstream) and timber (downstream). Major quantities include 21,120 lb. reinforcing steel, 28 mbm. timber, 8.9 mbm. creosoted timber, 144 cu. yd. concrete. Contract time is 180 days and labor rates range from $1.00 to $2.15.

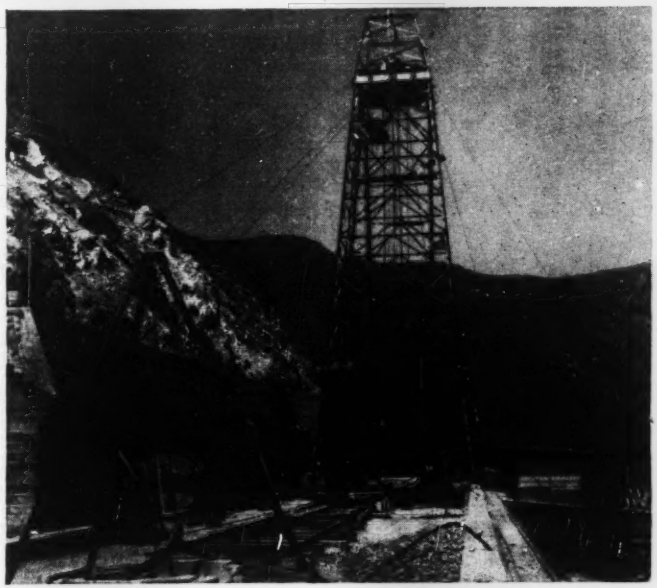
Condon-Cunningham low on Omaha flood control

Three contractors submitted bids to the Omaha District, U. S. Corps of Engineers, June 24, on local protection works along the Missouri River in Omaha. Condon-Cunningham Co., Omaha, was low, at $321,764, compared to the engineers' estimate of $230,626. Two other contractors tried for the work; both bid in the neighborhood of $340,000.

Principal features of the work include: clearing site and diversion and care of water and sewage; construction of three pumping stations; furnishing and installing pumps and equipment; construction of concrete pipe sewers and poured-in-place pressurized sewers with all appurtenances; pressurizing existing sewer lines; miscellaneous riprap and appurtenances at the outlets of three existing sewers. Unit-bid items include: 7,400 cu. yd. structural excavation; 5,700 cu. yd. backfill; 1,390 cu. yd. concrete; 1,950 barrels portland cement; 219,600 lb. reinforcing steel. All sewer work, protective work at sewer outfalls and installation of all but one sluice gate are to be completed in 210 calendar days. Other work is to be completed in 360 days. Wage rates range from $1.20 to $2.20.

Unit price reports on jobs cited in these columns will be mailed to readers of Engineering News-Record on request at no charge. Address: Manager, Business News Dept., Engineering News-Record, 330 W. 42nd St., New York 18, N. Y. Identify by quoting headline as used herewith, and be sure to give full mailing address.

DEVELOPMENTS ABROAD



A 72-IN. CORE DRILL is used in excavating five 1,400-ft. vertical penstocks on the Santa River Valley hydro project in Peru. The extra large calyx drill is powered by a 100-hp. electric motor which descends—operator and all—with the drill. The diverted Santa River will drop to an underground power station directly below this spot.

Peru—The Santa River Dam across the Canyon del Pato has been completed, and the project now awaits installation of the roller crest gate and completion of the tunnel system. Project engineers estimate that if delivery of installation equipment goes on schedule, the Santa Valley will receive power from the completed plant by the end of 1950.

When installation is completed, 100,000 kw. will be delivered 56 miles to the port of Chimbote. Large deposits of iron and coal are to be found in the Santa Valley, and this new development by the Santa Corporation is seen as a key to new heavy industrial development in Peru.

Pouring concrete for the dam began in July, 1946, after completion of a 728-ft. diversion tunnel. The overflow masonry dam is 78 ft. high and has a vertical downstream face, designed especially as a precaution against erosion by stones washed over the spillway.

Mountains in the Santa Valley have greater heights than the Alps, posing no small transportation problem. Access to the present tunneling operation (which is 85 percent complete) is by a cable car that ascends at a 45-deg. incline for 2,200 ft. All personnel and heavy equipment have been moved by this method, including an 80-ton, 72-in. core drill. This is the first time a drill of such diameter has been used in South America (ENR Aug. 7, 1947, vol. p. 200). The calyx drill is sinking five 1400-ft. deep, 6 ft. diameter penstock shafts to an underground power station.

Transport

Switzerland—The Committee on Road Transport of the United Nations Economic Commission for Europe, after prolonged study and discussions in Geneva, has come up with a proposed road network for Europe. The commission deemed it unwise to plan construction of a network of super roads to cover the whole continent; it was decided rather to utilize existing highways, linking them across frontiers and unifying their main features.

The formidable task of integrating the various widths and standards necessitated definition of features to be taken into account in development of a standard type of road for the continent.

The committee has divided roads into three categories, according to width, and has laid down other principles which will qualify roads as "international highways."

Airports

Australia—The Department of Civil Aviation, in cooperation with the Department of Works and Housing, has drawn up a three-year plan to spend about $55,000,000 on 134 airports throughout the Commonwealth.

This money will be spent on the improvement and extension of airports and buildings and does not include maintenance expenditure, or the provision of electrical equipment, navigational aids, lighting, and similar facilities.

The unprecedented speed with which postwar air traffic has grown requires that the department set about this long-range program to bring Australian airports up to modern standards. Throughout all this work, priorities will be allotted to airports where the need is greatest, irrespective of geographical condition or population.

Power and Irrigation

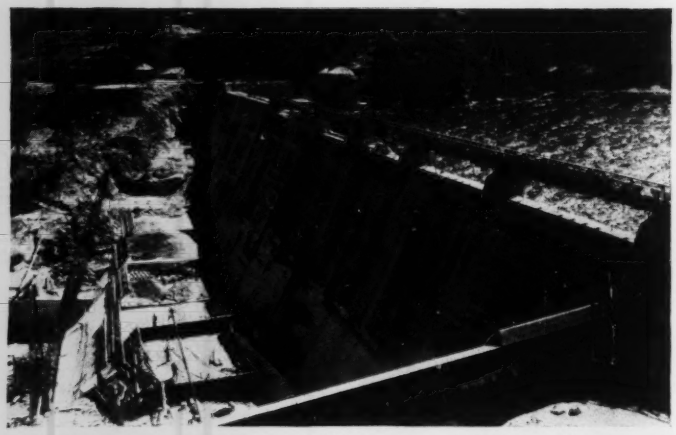
India—Construction work on the first part of India's $270 million project to harness the Kosi River in Bihar will begin in about three months. The first phase will comprise a dam at Chatra, 45 miles inside Nepal, and a network of canals to be completed in four years. Estimated to cost nearly $90,000,000, it will irrigate 2,000,000 to 3,000,000 acres of land and generate about 100,000 kw. of electric power.

The second part of the project calls for construction of a 750-ft. dam, to be the highest in the world. Preliminaries for this project have reached an advanced stage of investigation. The U. S. Bureau of Reclamation has agreed to assist the India Government in carrying out a trial load analysis of the dam with the help of models for which facilities exist only in America. A group of Indian engineers will work with U. S. on the project.

Three experts—John L. Savage and Walker Young, former chief engineers of the Bureau of Reclamation, and Cotor Nickell, well-known geologist—recently made a comprehensive inspection of the damsite.

Third largest of India's many big rivers, the Kosi is formed by the confluence of the Sun Kosi, Arun and Mur rivers which rise in the mountains of Tibet and Nepal.

Mexico—A diversion dam and distribution canal to irrigate 200,00 acres



TO TRIPLE CAPACITY—Mundaring Weir in western Australia is to have its crest raised 33 ft. to increase the present storage three times. In the Darling Ranges near Perth, the dam has supplied water for the gold fields (the Golden Mile at Kalgoorlie is one of the world's richest gold centers) since the beginning of the century. (Eastern Publishers' Service Photo)

of Mexico's newest cotton belt—near Matamoros, opposite Brownsville, Tex. —is assured with the recent making of a $7,500,000-financing pact.

The dam and canal will be at Anzalduas. Bids for the job are to be invited soon. The financing plan has the Bank of Mexico lending the money, the Government department's supervising its distribution and the cottonmen repaying from profits of crops made possible by the irrigation job.

Financing

India—Tremendous disparity between India's plans for multi-purpose river development projects and her resources of cash and materials is pointed up in a recent study of the schemes either under investigation or preliminary stages of construction.

Works already under construction are estimated to call for outlay of $1.073 billion. Those being blueprinted would cost another $3.6 billion. The latter would also require twice India's total annual output of steel and nearly four times the annual cement output.

When these requirements are taken in conjunction with the country's needs for highways, bridges, railways and normal industrial requirements it becomes apparent that the vast majority of India's river projects will not progress appreciably in this generation.

Miscellany

Australia—One of the biggest photographic survey jobs in the history of flying is being carried out by the Royal Australian Air Force. Aim of the immense project is to photograph from the air the whole of the mainland of Australia (about 3,000,000 sq. mi.) for mapping purposes.

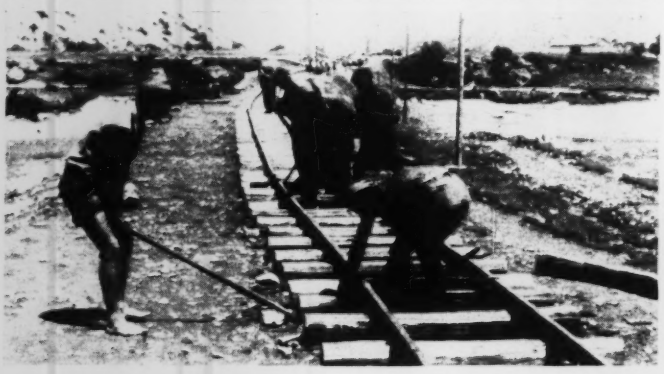
Union of South Africa—Experiments at the Forest Products Institute in Pretoria have resulted in a discovery which is said to be one answer to timber requirements in building.

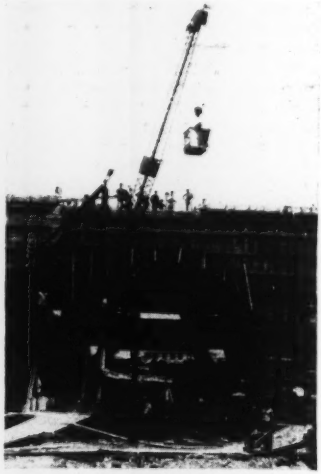
The experiments sought to get rid of the disadvantages of "blooming" after timber was treated with the preservative pentachlorophenol. Small crystals found on the surface were an irritant when touched. The dissolving oil used in the preservative also seeped out after the timber was placed in position in buildings.

The use of dehydrated castor oil solved the problem. A paraffin, dehydrated castor oil and pentachlorophenol mixture was found to be free from oiliness and the undesirable features of earlier mixtures.

The new preservative has great powers of penetration. Timber need only be immersed in it for a few minutes for complete penetration.

The Institute also found the use of an aromatic oil from the United States made it possible to mix certain mineral oils with creosote. This will help to double the Union's stocks of creosote.





NARROW GAGE RAIL, now completed, joins Nikchitch and Titograd in the former Balkan monarchy, Montenegro. The 35-mile rail line crosses mountainous country now within the southern portion of Yugoslavia and was constructed as part of a five-year economic development plan. At right, a concrete arch is constructed on the line. (Eastern Publishers' Service Photo)

MUNICIPAL AFFAIRS

SEATTLE-TACOMA AIRPORT administration will center in this $4,000,000 building. A six-floor center section is flanked by three-story north and south wings which are swept back at an angle of 22.5 deg. The building covers 243,000 sq. ft. on an 800-ft. frontage. It is built of reinforced concrete, with no division between wings and central section. Port of Seattle engineers designed the structure. Lease & Leigland, general contractors, built it.

Traffic Troubles

Municipal efforts to solve the ever-present traffic congestion problem looked to expressway construction as a solution last week.

There became apparent a series of moves designed to push construction of expressways or limited access roads that would carry through traffic or long distance traffic either through or around congested business districts.

Among the plans and problems in this field were:

At Richmond, Va., more than two years after the expressway proposal was put before the city government, a new nine-man unicameral city council finally adopted a five-year capital budget that provides funds for the express highway. The road, to be financed jointly by the state and federal governments, is planned as a limited-access-divided-lane highway running through Richmond roughly in a north-south direction, to serve as U. S. Route 1 within the city. The highway will be depressed through the center of the city.

Probably the biggest program of the week was Chicago's $50,000,000 Congress Street super-highway which is now up for bidding. First structure to be built will be a $400,000 overpass at Peoria St. across Michigan Ave.

At Milwaukee, the city commission planning staff submitted a proposal for a $46,000,000 six-year public improvement program that would include provision of money for a start on the proposed Milwaukee expressway system. Biggest general traffic project would be a $10,000,000 downtown grade separation from West Pittsburgh Ave. to North 12th St. raising the Milwaukee Railroad track, building a new viaduct, and other work.

At Seattle, Wash., a total of $2,200,000 in additional state and federal funds has been made available for construction of the proposed Alaskan Way viaduct and of a depressed roadway connection to the main traffic arterial leading north out of the city. The new allocations bring to $8,500,000 total appropriations for the project. Bids for the $6,300,000 viaduct, which will extend along the waterfront past the business section of the city, are expected to be called this fall.

Detroit Plans Criticized

One city ran into difficulty with its expressway program. At Detroit, the program took a verbal beating from the city's Rapid Transit Commission consultant, Thomas B. Conway, who termed the Detroit plans "pathetically inadequate."

Mr. Conway said that the city will not get its most badly needed expressway—on Grand River Ave.—for 15 years under present plans and financing. He criticized present plans to extend the John Lodge Expressway northwest, contending the expressway should run straight north, and made other charges of mistakes in the program. Answering Mr. Conway, Charles M. Ziegler, state highway commissioner said that the consultant was "pathetically inadequate in his facts." Ziegler said that the program was planned by the city, Wayne County, the state and federal officials, and that some programs were sidetracked because of the enormous expense of destroying blocks of business buildings to make way for such roads.

One other city — Albuquerque, N. M.—began a seven phase traffic study to determine just what it should do to clear its streets of traffic and, adding an oddity, the city of Great Falls, Mont., made preparations to sue the federal government for recovery of damage to its streets. R. E. McCormick, city engineer, said that the city sustained damages of $102,700 by abnormally heavy wartime traffic.

Water-Sewer Work

Slowly catching up on their need for improvement and expansion of municipal water and sewerage facilities, cities pushed programs to improve water supply and to cooperate with state-wide and area-wide plans for cleaning up stream pollution.

On the water "front" probably the biggest job was an $8,000,000 pipeline for Minneapolis, where a 48-in. main is being rapidly pushed across 19.5 miles of the city to connect with the Columbia Heights filtration plant. Other water projects included an extensive job at Brownsville, Tex., where a new water filtration plant and new pipes are under construction.

The City of Milwaukee congratulated itself on having won a round in its battle with its suburbs at Madison, Wis., to keep control of the city waterworks system. City representatives had gone to the state capital to object to a bill before the state senate that would have given the Milwaukee Metropolitan Sewerage Commission the right to operate a waterworks, including the right to condemn the city's waterworks for the commission's use. Suburbs had charged that the city charged rates too high for its water.

At Trenton, N. J., plans are going forward for complete reconstruction of the city water plant at a cost of three to four million dollars, to be financed by water revenue bonds.

On the stream pollution front, two cities—Cincinnati and Pittsburgh—agreed to cooperate with area-wide pollution programs. Cincinnati, according to the Ohio River Valley Sanitation Commission, is providing funds and expediting design of sewage treatment works that will soon reach the construction stage. Ultimate cost will be about $25,000,000. At Pittsburgh, the State Sanitary Water Board announced it had been notified by city officials that the city council had passed legislation making available $2,000,000 in city funds to the Allegheny County Sanitary Authority for use in preparing detailed construction plans and specifications for a sewage treatment system for Pittsburgh and 42 adjacent towns.

MEN AND JOBS

Roger and **Louis Corbetta**, principals of the Corbetta Construction Co., specialists in concrete construction, have been elected vice-presidents of Ibec Housing Corp., and will be in charge of the construction division. **Emil H. Praeger**, partner in the firm of Madigan & Hyland, and consultant to the United Nations on its headquarters under construction in New York City, has been appointed consulting engineer of the corporation, which is working on a low-rent housing project in Norfolk, Va. Ibec Housing Corp. is an affiliate of International Basic Economy Corp., of which Nelson A. Rockefeller is president.

Charles A. Jackson is resident engineer for the Corps of Engineers, on the $32,000,000 Allatoona Dam, Ga., which will be completed early in 1950.

Lawrence Palmer, associate engineer for the Puget Sound Power & Light Co. at Seattle, Wash., has been promoted to engineer, replacing **Carl Myers**, who has accepted a new position with Ebasco Services, Inc., New York.

R. W. Cook, deputy manager of the U. S. Atomic Energy Commission's Oak Ridge operations office, has become acting manager, replacing **John C. Franklin**, resigned. Mr. Cook was assigned by the Corps of Engineers to the Manhattan Engineer District in July, 1944. He was named deputy manager of field operations and manager of the Oak Ridge Area in June, 1947. He was graduated from Michigan State College in 1933 with a degree in civil engineering. After two years with marine contractors and five years with consulting engineers in Chicago, he joined the Army in November, 1940.

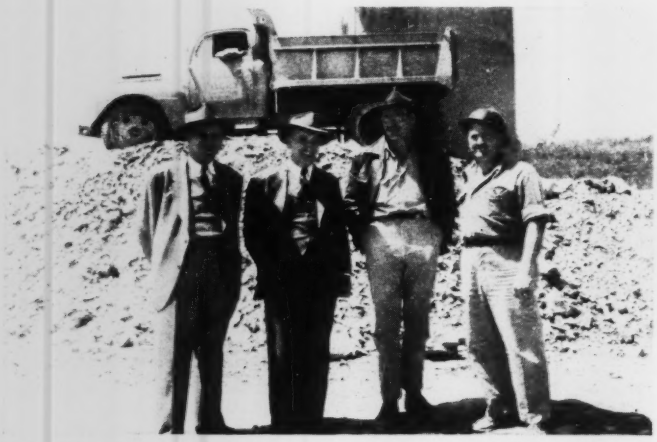
Nine of the North Carolina state highway commission's division engineers have received new assignments and the tenth was retired. The reorganization calls for the following shifts:

W. N. Spruill, Second Division engineer at Greenville, to the First Division at Ahoskie; **Romilous Markham**, Fourth Division engineer at Wilson, to the Second Division at Greenville; **L. E. Whitfield**, Sixth Division engineer, to the Third Division at Fayetteville, replacing **Thompson T. Betts; T. J. McKim**, First Division engineer at Ahoskie, to the Fourth Division at Wilson; **H. E. Noell**, Ninth Division engineer at Shelby, to the Fifth Division at Greensboro; **T. G. Poindexter**, Sixth Division assistant engineer, to remain at Asheboro as division engineer; **T. A. Burton**, Fifth Division engineer at Greensboro, to the Seventh Division at Albemarle; **J. C. Walker**, Tenth Division engineer at Asheville, to the Eighth Division at North Wilkesboro; **L. B. Peck**, Seventh Division engineer at Albemarle, to the Ninth Division at Shelby; and **Z. V. Stewart**, Eighth Division engineer at North Wilkesboro, to the Tenth Division at Asheville.

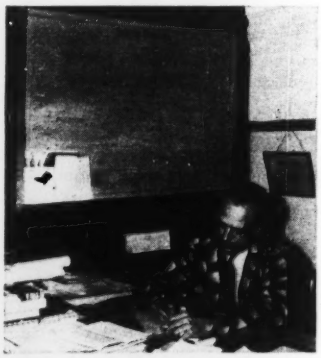
George M. Geran, assistant superintendent of construction and repair of St. Paul, Minn., has become superintendent of construction and assistant city engineer, succeeding the late W. S. Cockroft.

Sidney T. Harding, professor of irrigation at the University of California for 35 years, has retired. He is a graduate of the University of Michigan, and has been construction engineer for various California irrigation districts, federal bureaus, and private companies since 1905.

Lt. Col. Ellsworth I. Davis, assistant district engineer at Sacramento, Calif., for the Corps of Engineers, has been assigned as district engineer at Galves-



Design, field supervision and construction of 13,600 ft. of 8-ft. dia. water tunnel in Cincinnati, Ohio, are in the capable hands of, left to right, Ed. Farmer, of Black and Veatch, consulting engineers; R. E. Duhnic, asst. supt. of waterworks; Martin Hemker, resident engineer; and Harry D. Foley, contractor on the $3,200,000 project.



W. W. Towne, chief engineer of the South Dakota Department of Health, keeps track of water supply and sewage problems throughout the state from his headquarters in Pierre. At present, troubleshooter Towne furnishes general supervision and operating assistance to 80 sewage disposal and 25 water treatment plants.

ton, Tex., succeeding **Col. B. L. Robinson** who became division engineer of the South Atlantic division at Atlanta, Ga.

Col. Wayne O. Axtell, Corps of Engineers, engineer in the office, Chief of Engineers, Washington, D. C., has retired.

Robert Carpenter, who recently resigned as city planner for the Fort Wayne, Ind., Planning Commission, has become a planner with the Detroit, Mich., Metropolitan Area Regional Plan Commission.

Prof. A. Pemberton Johnson, coordinator of personnel guidance of the schools of engineering, Purdue University, Lafayette, Ind., has resigned to go to Princeton, N. J., as project director of the Educational Testing Service.

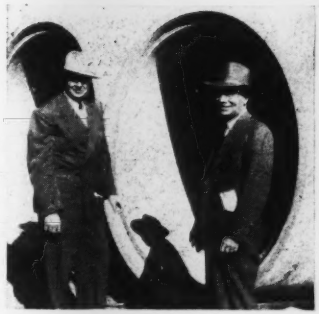
Jack Steketee, civil engineer, formerly with Giffels & Vallet, Inc., Detroit, Mich., has joined A. H. Samborn & Associates, Toledo, Ohio, as a partner, and the firm will now be known as Samborn, Steketee and Associates. Mr. Steketee is a graduate of the University of Michigan, and served in the Navy. While with Giffels & Vallet, Inc., he coordinated engineering for installation of a new blooming mill and shear at Rotary Electric Corp., and the slag handling plant of Ed. Levy Co., Detroit, Mich.

Robert Adams, planning director for Marion and Grant County, Ind., for the last two years, has been employed as city planner in Fort Wayne, Ind., to replace **Robert D. Carpenter**, resigned.

Edison H. Johnson has been named city building inspector at Durham, N. C., succeeding the late John T. Still.

Aime Boileau has been appointed city engineer of Hull, Que.

Col. Bernard L. Robinson has been made division engineer of the South Atlantic division, Corps of Engineers, Atlanta, Ga., to succeed **Col. Mason Young**, assigned to overseas duty. Since 1947 Colonel Robinson has been engineer of the Galveston district. Serving in numerous engineering assignments in the Pacific war, Colonel Robinson was appointed in 1945 chief engineer, U. S. Army forces, Middle Pacific area, with the rank of brigadier general. He was awarded the Distinguished Service medal and the Bronze Star for his services in New Guinea.



W. R. McLean (left), supervising civil engineer, and John S. Longwell, chief engineer and general manager, East Bay Municipal Utility District, pose with sections of 66-in. reinforced concrete sewer pipe now being installed on Metropolitan Oakland's sewage disposal project. This is an interceptor sewer serving six cities on the east shore of San Francisco Bay.

John W. Woodward, left, resident engineer for the Pacific Gas & Electric Co.'s $61,800,000 Feather River hydroelectric project, pauses to go over blueprints with project's superintendent J. A. Cooney. Under their supervision is the construction of two diversion dams, two tunnels and two powerhouses, one of which can be seen in background. When job is completed 201,000 kw. will be available.

Louis V. Bean, former city manager of Waycross, Ga., is now city manager of Decatur, Ga.

Gilbert W. Ray, former city manager of Chapel Hill, N. C., has been named the first city manager of Fayetteville, N. C.

Joseph Schmit, who has served continuously as city engineer of Lewistown, Mont., since June 9, 1924, has been re-appointed.

Fred D. Rankins has been appointed city manager of Fort Lauder-

4 POTENT PREVENTIVES OF PUMPING PROBLEMS

...by YEOMANS

In buildings designed with real excellence in mind, it is natural to find Yeomans Pumps handling the four basic pumping functions—water booster, water circulation, drainage and sewage ejection.

WATER BOOSTER

In hundreds of the world's foremost buildings, Yeomans Pumps are quietly, dependably at work—many of them after many years of quiet, flawless service.

WATER CIRCULATION

Long experience, painstaking engineering and insistence on fine workmanship are fundamentals of Yeomans Pumps, and the true reasons why they deliver satisfaction.

DRAINAGE DISPOSAL

Famous for the "troubles they prevent"—for their sturdy, lasting reliability—are these durable two: Yeomans Heavy Duty Bilge Pump for handling liquids free from solids, and Yeomans Screenless Ejector for wastes containing solids.

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Greater Output . . . Because RED ARCH buckets are ahead in performance, maintenance economy and long life. That means more hours on the job, delivering bigger yardages over the "long pull" — the kind of dependability that spells profits!

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The Chicago Bridge and Iron Co. has a yard for fabricating 24-ft. penstocks at the site of Buggs Island Dam, Va. H. W. Brown, left, penstock inspector for the Army Engineers, and C. D. Giffin, superintendent for C. B. & I., momentarily doff their hard hats to pose in front of a section that will carry water for generating 32,000 kw.

R. F. Bracelin was appointed recently as head of the Chief Joseph Dam branch of the Seattle, Wash., district, Corps of Engineers. With the corps for 24 years, he previously was assistant chief of the engineering division of the Seattle office. He will supervise the planning and design of the Chief Joseph Dam (formerly called the Foster Creek Dam) on the Columbia River near Bridgeport, Wash.

---

dale, Fla., succeeding Carlton Roberts, resigned. **Robert Lowery** is assistant city manager and director of public works.

C. E. Jacobs, on leave from the University of Utah, where he has been head of the geophysics department, is opening a consulting office in Salt Lake City. His specialty is groundwater engineering and subsurface exploration. For eleven years he was hydraulic engineer with the Ground Water Branch of the U. S. Geological Survey, the last three in Washington, D. C.

Col. Frank H. Forney has been

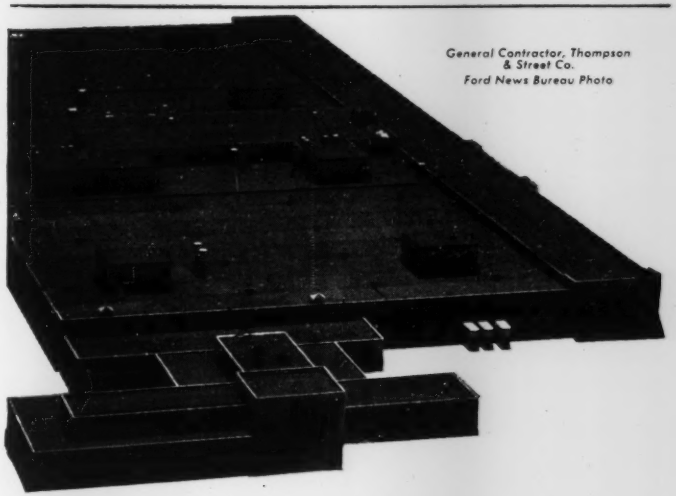
made district engineer of the Army Engineers in Buffalo, N. Y. He will leave his place in the office of the Chief of Engineers in Washington to report for duty in Buffalo on July 6. He was graduated from the U. S. Military Academy in 1929 and received a B.S. degree in civil engineering at the University of California. He saw extensive service in World War II, and recently has been chief of the Repairs and Utilities Division in Washington.

Anthony F. Arpaia, a former OPA administrator in Connecticut, has been appointed by Governor Bowles to be chairman of the newly created Regional Planning Authority in the south central district.

S. B. Zisman, executive director of the Philadelphia Citizens' Council on City Planning, has left for Frankfurt, Germany, to be consultant on city planning for the United States Army of Occupation. He has been granted a three months leave of absence from his Philadelphia post. During the Second World War, Zisman was with a special unit of the Air Corps.

Gamble M. Bowers, for 14 years public works director of Richmond, Va., and in the employ of the city for the last 41 years, will retire Sept. 1 next.

Ellis L. Armstrong is construction engineer in charge of the Bureau of Reclamation's $25,000,000 Trenton Dam (formerly Culbertson) project in southwestern Nebraska. A graduate of Utah State, he has been connected with the design and construction of earthfill dams for 15 years. He was on the construction of Midview, Moon Lake, and Deer Creek dams in Utah and Anderson Ranch Dam in Idaho before spending four years on earth dam design in the Bureau's chief engineer's office in Denver.



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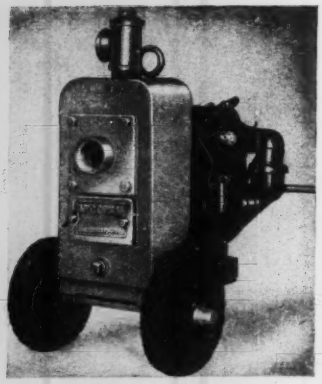

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OBITUARY

Commodore Wilfred Painter, USNR, a construction engineer in Shanghai, China, for many years, was killed July 10 in an explosion aboard a pleasure boat at Washington, D. C. Entering the Navy in 1941, he saw action with the Civil Engineer Corps, and was in charge of raising the USS California, sunk at Pearl Harbor. Until recently, he had represented the firm of Atkinson and Drake in Greece.

Capt. William Evans, 80, an engineer officer in the Spanish-American and First World Wars, died July 6 at Walter Reed Hospital, Washington, D. C. He was a civil engineering graduate of Johns Hopkins University.

George F. Eaton, 69, president of the Eaton Asphalt Paving Co., Covington, Ky., and vice-president of the Eaton Oil Co., of the same city, died at McGregor Bay, Ont., July 7. He had been engaged in the road contracting business all his life until his retirement two years ago.

Capt. George M. Thompson, 96, surviving member of the class of 1872 at the Massachusetts Institute of Technology, died at Charlton, Mass., July 12. A captain of engineers in the Spanish-American War, Thompson helped build railroads in New England, the South and Mexico. He was chief engineer of the Boston and Lowell Railroad for five years and did engineering work for the Boston and Maine and New Haven lines for several years. He reconstructed the narrow gauge road from Boston to Revere and the East Boston tunnel. In 1940, he supervised the Massachusetts Geodetic Survey. Until recently, he was a consulting engineer.

Armiger F. Dredge, 57, credited with building the first high-pressure steam power plant in the United States at South Bend, Ind., in 1924, died at Oakland, Cal., June 26. He had been an employe of the General Engineering and Dry Dock Co., Alameda, until retirement two years ago.

James J. Downey, 59, engineer for the Jackson County, Missouri, planning commission, died July 14.

Arthur D. Stone, 68, for 15 years a civil engineer with the Federal Power Commission, died June 26 at Alameda, Cal., after a long illness. Stone had been a civil engineer with the U. S. Forestry Dept., before

joining FPC, and was a lieutenant commander in the Navy during World War I.

Herbert Pomfret, 62, an engineer associated with numerous Southern California building projects during the past 25 years, died at Los Angeles June 27.

Frederick Hoitt, 65, for 27 years secretary and assistant treasurer of the New England Road Builders Association, Boston, died at Swampscott, Mass., recently. Born in Nashua, N. H., he was a graduate of Northeastern University Law School. A founder of the association, he was a vigorous opponent of the diversion of funds from highway purposes, and was long influential constructively in legislative circles in the northeast.

John H. Lewis, 71, Oregon's first state engineer, died at Portland July 12. After receiving a civil engineering degree at Cornell University, he engaged briefly in railroad work, then became Oregon's state engineer in 1904. Retiring in 1918 to private practice, he subsequently became a member of the Oregon legislature and the Port of Portland Commission. He was an honorary life member of the American Society of Civil Engineers.

Clarence M. Gray, 66, president of the C. M. Gray Co., Waterville, O., died at Toledo July 5. He entered the general contracting field in 1912, and built roads in Ohio and Michigan.

Dwight W. Leggett, 63, died July 4 at Jefferson, O. He had been bridge engineer for Ashtabula County for 36 years, prior to his retirement last Jan. 1.

Walter H. Duncan, 64, died July 1 at Hags Head, N. C. He was deputy commissioner of the Bureau of Community Facilities in the Federal Works Agency before his death. In 1933, he was state auditor of the Civil Works Administration for Nevada, and in 1935, became WPA finance director there.

John E. Thomas, 52, Nashville construction engineer and president of the J. E. Thomas and Allied Construction Companies, died July 1. He was a civil engineering graduate of the University of South Carolina, in 1921.

Linwood G. Mort, 40, director of the Real Assets Division of the Connecticut Comptroller's office, died July 4, of a heart attack. His home was at Guilford, Conn. After graduation as a civil engineer from Rensselaer Polytechnic Institute in 1934,

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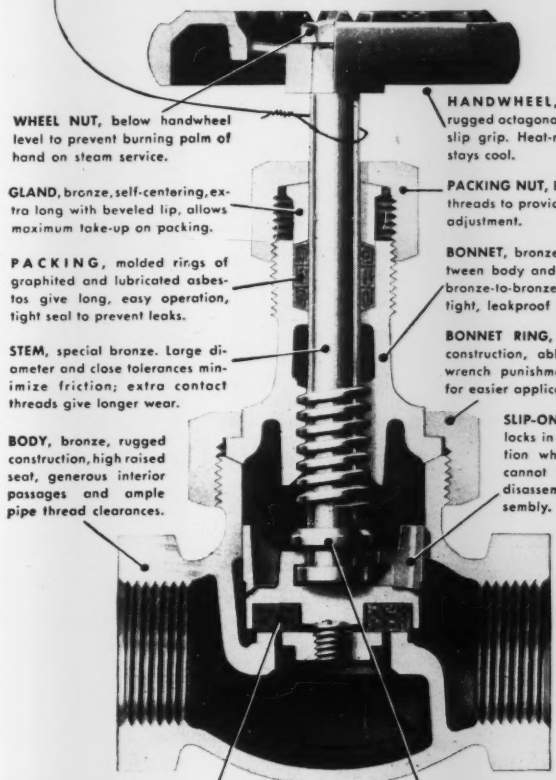
KENNEDY HEAVY BRONZE GLOBE VALVE (FIG. 89) recommended for services up to 150 pounds steam or 250 pounds water, oil, air or gas. ¼" to 3" sizes available.



WHEEL NUT, below handwheel level to prevent burning palm of hand on steam service.

HANDWHEEL, malleable iron, rugged octagonal shape, for non-slip grip. Heat-radiating design stays cool.

GLAND, bronze, self-centering, extra long with beveled lip, allows maximum take-up on packing.

PACKING NUT, bronze with long threads to provide extra packing adjustment.

PACKING, molded rings of graphited and lubricated asbestos give long, easy operation, tight seal to prevent leaks.

BONNET, bronze, with joint between body and bonnet making bronze-to-bronze true union for tight, leakproof construction.

STEM, special bronze. Large diameter and close tolerances minimize friction; extra contact threads give longer wear.

BONNET RING, bronze, heavy construction, able to withstand wrench punishment. Large flats for easier application of wrench.

SLIP-ON DISC HOLDER, locks in a definite position when wide open, cannot fall off during disassembly and reassembly.

BODY, bronze, rugged construction, high raised seat, generous interior passages and ample pipe thread clearances.

RENEWABLE COMPOSITION DISC, provides perfect seating; asbestos for steam service and special types for various services and temperatures.

BEVELED SHOULDER, makes tight joint with conical seat on underside of bonnet when valve is wide open, for repacking under pressure.

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Harry G. Dehring, Foreman, Taylor Brothers, South Bend, Ind., states "Seven men set up the forms for a 26' x 27' foundation in one hour and fifteen minutes."

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CHICAGO 39, ILLINOIS

he became town engineer in Griswold, Conn., and in 1936 joined the state WPA engineering staff, later becoming its chief. Thereafter, he became vice-president of Haller Engineering Associates, Cambridge, Mass. In 1943, he organized the firm of Argraves & Mort, New Haven consulting engineers. He continued with the firm after appointment to the comptroller's office.

Harry Jackson Turner, 65, for 13 years assistant engineer in the Connecticut Highway Department's design division, died July 6. He was graduated in 1907 from the Sheffield Scientific School of Yale University. Before joining the highway department, he was with American Brass Co.

Oscar Newstrom, 64, of Willmar, Minn., died July 2. Before moving it to Willmar, in 1941, he operated the Newstrom Co., in Minneapolis for 35 years. He was an architect and engineer.

W. G. Kovy, 57, division construction engineer for the Tennessee Highway Department at Jackson, Tenn., died of a heart attack July 2. A graduate of the University of Indiana, he had served 29 years with the department, 28 of them at Jackson, where for 15 years, he was division engineer.

Thomas J. Allen, 51, a Buffalo consulting engineer, died of a heart attack at his home July 7. For several years, he had been associated with Jacob Fruchtbaum, in Buffalo.

Leverett F. Eggleston, an engineer for the Southern Oil Co. of New York, died at his Elmira home July 7. A civil engineering graduate of Syracuse University in 1909, he worked for the New York State Highway Department before acquiring a business in Elmira.

Horace Dodge Rouzer, 63, retired assistant architect of the United States Capitol, died July 4 at Martinsburg, W. Va. During his 16 years as assistant architect, he helped plan many new projects, including the New House Office Building, the Library of Congress annex and the Supreme Court building.

He entered federal service in 1906 as a civil engineer with the Navy Department's Bureau of Yards and Docks, and during World War I, was a Navy lieutenant in charge of construction at the Bellevue research laboratory. He became assistant architect of the Capitol in 1930, and retired in 1946.

Elections and Activities

With nomination tantamount to election, Mason G. Lockwood, Houston consulting engineer, is slated to be the next president of the Texas Society of Professional Engineers. Mr. Lockwood is now first vice-president. A native of Houston, he is a graduate of Rice Institute and registered as both an electrical and civil engineer.

The new state officers will be installed during the state convention in Houston, at the Rice Hotel, December 8-10.

Robert L. Ryan, Ventura County surveyor, was elected president of the County Engineer's Association of California at the group's annual convention. Ryan served the association as vice-president last year.

The Eastern Washington Builders chapter of the Associated General Contractors of America has been organized at Spokane, Wash. Robert W. Meighan of the Central Construction Co. is president, with J. L. Hazen of Hazen & Clark as vice-president; Henry S. George of Henry George & Sons, director; H. Halvorson, director, and Harry M. Roblee of Gus J. Bouten Construction Co., director. W. H. Peacock is the secretary. Organizers of the new group are former members of the Spokane chapter which continues in existence with a membership representing the heavy construction field.

Governor Douglas McKay of Oregon has appointed Bertram G. Dick and Charles B. Carpenter, both of Portland, to membership on the state board of engineering examiners. S. C. Schwartz has been named engineer-at-large on the board, under provisions of amendments written into the act by the last Oregon legislature.

MAJOR MEETINGS

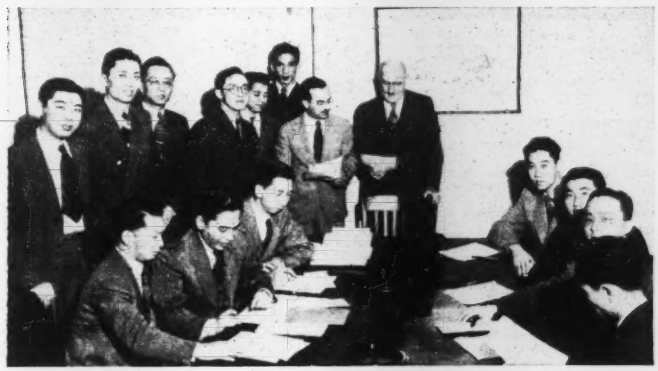
Association of Western Engineers, Patterson Hotel, Bismarck, N. D., Aug. 22-25.

New England Water Works Association, The Balsams, Dixville Notch, N. H., Sept. 13-16.

Public Works Congress and Equipment Show, Municipal Auditorium, Kansas City, Kan., Sept. 18-21.

Institute of Traffic Engineers, Wardman Park Hotel, Washington, D. C., Sept. 25-28.

ENGINEERING SCHOOLS



CHINESE ENGINEERING STUDENTS—These Chinese students at New York University College of Engineering gathered recently to fill out special papers in order to obtain funds supplied by the U. S. State Department to tide them over the emergency caused by recent developments in their homeland. Prof. J. Richard Toven (sixth from right) and Dean Henry J. Masson (fifth from right) arranged for temporary use of university funds to aid the students several months ago and more recently negotiated for supplementary assistance through the Economic Cooperation Administration.

Gifts for M.I.T.

A gift of $1,000,000 from Alfred P. Sloan, Jr., chairman of the General Motors Corp., for a metals-processing laboratory topped the $5,100,000 in contributions announced by President James R. Killian, Jr., of the Massachusetts Institute of Technology on June 11.

A graduate of the institute more than 50 years ago, Mr. Sloan had previously given $1,000,000 to his alma mater.

Pomona College of California and Wesleyan University in Middletown, Conn., have joined the Massachusetts Institute of Technology in a plan for combined liberal arts and technological study. This plan now includes 14 liberal arts colleges, which have joined with M.I.T. in organizing an effective combination of liberal arts and specialized technological training at the undergraduate level.

Commencement Honors

Wilbur M. Wilson, research professor of structural engineering in the civil engineering department of the University of Illinois, was named the eleventh winner of the Marston Medal for achievement in engineering at the 78th annual commencement at Iowa State College. The Marston Medal is awarded to an engineering alumnus of Iowa State College in recognition of achievement in engineering. The award was established through the generosity of Anson Marston, who was professor of civil engineering from 1892 to 1920, dean of the division of engineering from 1904 to 1932, and dean emeritus at the time the award was established in 1938.

Educational Notes

Norwich University, Northfield, Vt., first college in the United States to teach civil engineering, has received a gift of $500,000 from Godfrey Lowell Cabot of Boston, Mass. Dr. Cabot has been a trustee of the university since 1934, and has given Norwich funds to establish a chair of air transportation. Total of his gifts is now over $1,000,000. Norwich University was founded in 1819 and soon after inaugurated courses in civil engineering. It now confers degrees in civil engineering, electrical and mechanical engineering, and also in liberal arts. Dr. Cabot has sanctioned merging of his funds to establish a curriculum to prepare men for work in the field of aviation. The fund will also provide a new science unit for the college.

Sponsored by the North Carolina Sewage Works Association, a sewage and industrial waste treatment operations school was held at the University of North Carolina School of Public, Chapel Hill, N. C., in June. Courses offered covered basic and advanced subjects, and emphasis was placed on industrial waste problems as well as other problems of municipal sewage treatment. Serving as instructors for the school were: A. E. Griffin of Newark, N. J.; L. L. Hedgepeth of Bound Brook, N. J.; H. E. Schlentz of Chicago; J. M. Jarrett, chief engineer of the Division of Sanitary Engineering of the North Carolina State Board of Health; Professors H. G. Baity, Emil T. Chanlett, and Davis S. Frey of the University of North Carolina; Prof. W. B. Snow of Duke University, Durham, N. C., and J. R. Malone and W. G. Brown of Durham, N. C.

The engineering school of Seattle University at Seattle, Wash., has grown to a peak enrollment of 300 since the war, according to the Rev. Edmund B. McNulty, S.J., who heads the school. Two-year pre-engineering courses offered before the war have been expanded to fully-recognized standing in civil, chemical, mechanical, electrical and industrial engineering.

Prof. Fred F. Parker, chairman of the graphics and engineering department at Dartmouth College, Hanover, N. H., after more than 25 years of service, has been retired. He was graduated from the Thayer School of Engineering at Dartmouth in 1907.

Melvin Jackson has been appointed assistant professor of civil engineering at Georgia Institute of Technology. A graduate of the University of Illinois and the University of Southern California, Dr. Jackson formerly was structural design engineer for J. B. Dennenbaum & Co., Houston, Tex.

F. Stuart Chapin, Jr., who obtained degrees in city planning from Massachusetts Institute of Technology, has been named associate professor in the Department of City and Regional Planning of the University of North Carolina, Chapel Hill.

Following formal dedication of the new $500,000 engineering building of the University of Portland, Ore., installation of equipment has been started for an enlarged course of study in general engineering at the fall term. The three-story building, with a two-story wing housing the heavy equipment laboratory, has about 44,350 sq. ft. of floor space. An enrollment of around 300 is expected for the school of engineering in the coming year.

The 30th chapter of Chi Epsilon, the national honorary civil engineering fraternity, was installed at the City College of New York on June 10.

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

August 2

Minn., Granada—Village, D. K. True, clk., Granada, water distr. sys., incl. furnish and install 9,000 lin. ft. 2- to 6- in. c.i. mains, hydrants, 25,000 gal. steel tank on tower, ext., $30,000. Plans deposit $15. L. L. School & Assoc., Spencer, Ia., engrs.

August 3

Ala., East Brewton—City, deep well, pump, steel standpipe, pump station, 21,300 lin. ft. 2 to 8 in. watermains. Plans deposit $10. Donald Mills, Box 534, Selma, engr.

August 5

Minn., Moorhead—City, P. A. Cook, clk., water treatment plant, $150,000. Foss & Co., Moorhead, engr. CD 12/2.

August 8

Tex., Houston—City, City Hall, 900 Brazos St., 500,000 gal. steel water reservoir for Heights Pumping Station. $110,000. L. Fugate, city engr. CD 6/14.

August 9

California—State Div. Architecture, P. Wks. Bldg., Sacramento, imprv. water supply sys. in Castle State Park and McArthur-Burney State Park. Anson Boyd, state archt.

August 10

Ia., Ottumwa—Bd. Water Supply, Ottumwa, clear water storage tank, standpipe, pumps, chlorinators. $40,000. CD 3/23.

August 11

Ill., Galesburg—City, at office Alfred Nystrom, clk., City Hall, water storage reservoir, well station imprv. Plans deposit $30; water distr. sys. imprvs. Plans deposit $25; deep well, deep well pump imprv. Plans deposit $10. Warren & Van Pragg, Inc., 253 S. Park St., Decatur, consult. engr. CD 3/18/47.

Ia., Salem—City, City Hall, WW sys., $40,000. R. W. Gearhart, Cedar Rapids, engr.

LOW BIDDERS

Calif., Spadra—State Div. Architecture, P. Wks. Bldg., Sacramento, July 6, furnish, install water boiler and equip. at Pacific Colony Home, from Walter S. Leland Co., 55 New Montgomery St., San Francisco, **$65,857.** Anson Boyd, Sacramento, state archt.

Ga., Calhoun—City, water supply iniprvs., Items 6 and 7, from L. J. Bahin, Inc., College Park, **$37,144.** CD 6/17.

La., Breaux Bridge—Town, Town Hall, rejected bids July 6, WW imprvs, LB, **$72,031.** CD 6/24.

La., Clinton—Town, Town Hall, July 7, WW imprvs., from W. D. Owens Constr. Co., First National Bank Bldg., Montgomery, Ala., **$81,320.** CD 6/22.

La., Franklin—Town, Town Hall, July 5, WW imprvs., from Horace B. Rickey, Inc., Lafayette, **$42,697.** CD 6/29.

Mass., Swansea — Town, Water Bd., Town Hall, July 8, 18 mi. watermains, foundations for standpipe, Contr. 1: 23 mi. watermains, bridge crossing, Contr. 2, from George E. Duteau, 1125 Page Blvd., Springfield, **$167,555** and **$203,205** respectively.

●N. Y., New York—Bd. Water supply, 120 Wall St., Zone 5, July 19, constructing Delaware Tunnel of the Delaware Aqueduct comprising approx. 25 mi. concrete lined pressure tunnel circular in sect., and 11 ft. finished diam. for practically its entire length, the intake works, consisting of intake channel and intake chamber with brick and granite trim superstructure and Shafts 1 and 2 which will have circular in sect. concrete lined. Contr. 405, approx. 20,200 lin. ft. tunnel incl. intake structures in Town of Colchester, Delaware Co.; Contr. 406, approx. 43,560 lin. ft. tunnel, incl. Shaft 1, approx. 605 ft. deep and 14 ft. in diam. except for 150 ft. enlarged sect. 20 ft. in diam. Towns of Colchester, Delaware Co. and Rockland, Sullivan Co.; Contr. 407, approx. 40,350 lin. ft. tunnel, incl. Shaft 2, approx. 965 ft. deep with 14 ft. diam., Towns of Rockland and Neversink, Sullivan Co.; Contr. 408, approx. 27,750 ft. tunnel from the portal at the outlet end, approx. 520 ft. 9 ft. tunnel at the portal, Town of Neversink, Sullivan Co. from Walsh Contr. Co. and R. Perini, 1 E. 43 St., Zone 17, **$14,224,577.** CD 6/29.

O., Berea—City, City Hall, July 8, WW sys. addn. from Jack Lacoste Co., 1350 Marlowe Ave., Lakewood, **$39,600.** Est. $40,000. CD 6/24.

Tex., Morton—City, July 12, WW sys. imprvs. and extens. from Panhandle Constr. Co., P. O. Box 1500, Lubbock, **$57,954.** Est. $65,000. CD 6/28.

Tex., Waxahachie—City, July 12, water supply well from Layne-Texas Co. Ltd., 6419 Maple St., Dallas. **$55,000.** CD 6/28.

Wis., Racine—Bd. Water Comrs., Racine, July 8, laying 14,151 ft. 6 to 24 in. watermains, install 46 valves 10 valve pits, 5 hydrants, 12,975 ft. fill in trenches, from Tomaro Contractors, 4317 S. Lake Dr., Cudahy, **$73,555.**

CONTRACTS AWARDED

Del., Dover—City, Dover, watermains, Bradford and Minor Sts., to Pleasanton & Edgell, Inc., Dover, **$30,200.**

Tex., Waxahachie — City, c. i. waterlines, force-account. **$32,000.** CD 3/30/49.

Va., Wytheville—Town, Wytheville, filter plant to P. T. Withers, Gastonia, N. C., **$146,150.** R. Stuart Boyer & Assoc., Virginia Bldg., Richmond, engrs. Bids 7/12.

B. C., Port Moody—Great Vancouver Water Dist., 500 Beatty St., Vancouver, watermain from Coquitlam Lake feeder on Pipeline Rd., to boundary of Port Moody. Owner builds. **$135,000.** Awarded 7/6.

N. B., Saint John—Municipality, renewing watermains, Main, Union and Prince Edward Sts., own forces, **$50,000.** W. R. Godfrey, city engr. CD 9/30/43.

N. B., Sussex—Municipality, c/o H. N. Jonah, water sys., to Price Constr. Co., Moncton. Approx. **$50,000.**

Ont., Cooksville—Toronto Twp., Cooksville, watermains, to Leaside Contg. Co., 48 Lavender Ave., Leaside, **$30,000.** Bids 6/17. CD 6/13.

Ont., Norwood—Village, R. A. Dean, clk., Village Hall, waterworks sys., to Wainwright Constr. Co., 79 Cayuga St., Toronto. Approx. **$70,795.** G. G. Reid, 265 Avenue Rd., Toronto, engr. Bids 7/8. CD 6/29.

Ont., Oshawa—Municipality, water purification plant exten., to Ramsay Contg. Co., Ltd., 170 Perth St., Toronto. **$163,688.** Gore & Storrie, 1130 Bay St., Toronto, engrs. Bids 6/14. CD 6/3.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $25,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings

Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
● Project of $1,000,000 or over.
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

Que., Sillery—Municipality, water tunnel under St. Lawrence River, for water supply to reservoir, to Les Enterprises Bergerville Ltd., St. Malo Centre St. S., Quebec City, Que., **$40,000.** C. Langlois, town engr.

SEWERS, WASTE DISPOSAL

BIDS ASKED

August 8

Calif., Strathmore—Strathmore Public Utility Dist., Strathmore, sewage disposal plant and collection sewage sys., over $50,000. Plans deposit $25. Koebig & Koebig, Rowan Bldg., Los Angeles, engrs. CD 10/31/46.

August 12

Ga., Marietta — City, Marietta, 1,000,000 g.p.d. sewerage disposal plant. Plans deposit $15. Merritt & Walker, 206 Roswell St., engrs.

August 16

†Neb., Omaha—U. S. Eng., 1709 Jackson St., sewers and pumping stations, Unit V, Sec. 4, Serial No. Eng-25-066-49-257. CD 6/29, under LB.

LOW BIDDERS

Calif., Carmel—Carmel Sanitary Dist., Ocean and Dolores Sts., July sewage collection sys. extens., from N. P. Nan Valkenburgh, 8609 San Vicente Ave., South Gate, **$78,105.** CD 6/27.

Calif., Corte Madera—Sanitary Dist. 2, City Hall, July 8, sewage pumping plant and forcemains, from Associated Pipeline Welders, 167 Venus St., San Francisco, **$92,190.** CD 6/13.

Ill., Springfield—State Hy. Dpt., Springfield, July 15, storm sewers, etc., Ill. Rts. 32 and 132, from John Doherty Co., 7956 S. Vernon Ave., Chicago, 19, **$73,357.**

Ill., Princeton—City, City Hall, June 28, 4 mi. 8- and 10- in. sanitary sewers, from Ingemansen Bros., Caledonia, **$52,250.** Est. $50,000. CD 6/22.

Mich., Lansing — State Hy. Dpt., State Bldg., Zone 13, July 12, relocation sewers, John C. Lodge Expressway from Seldon to Grand River Ave. and from Vernor to Michigan Ave., U.S. 82-127-C-12, from Charles J. Rogers, Inc., 14836 Grand River Ave., Detroit, Zone 27, **$178,539.** CD 6/30.

Minn., St. Louis Park—Village, J. Justad, Village Hall, July 11, sanitary sewers, Dists. 26, 2L and 1R, from Phelps-Drake Co., 1415 S.E. 8 St., Minneapolis, **$53,400.** CD 6/21.

N. Y., Brooklyn—President Brooklyn Boro, Boro Hall, Zone 2, July 12, combined storm and sanitary sewers Avenue N;, storm and sanitary sewers E. 64 and 65 and E. 49 Sts., Fillmore and Flatbush Aves.; sanitary and storm sewers Rockaway Parkway, and storm sewer Rockaway Parkway, from Matarazzo & Melucci, 1163 61 Sts., Brooklyn, Zone 19, **$97,030.** CD 7/5.

O., Warren—City Bd. Control, Warren, rejected bids July 6, Hoyt Run No. 1 sewer. CD 6/7.

Ore., North Bend—City, City Hall, June 7, sewer lines from O. L. Soule, 2645 S. W. 111 St., Portland, **$59,449.** Est. $69,199. CD 5/19.

R. I., Providence—Blackstone Valley Sewer Dist. Comm., 238 State Office Bldg., July 13, Sect. A, Contr. 10, intercepting sewer, E. Providence from Callan Constr. Corp., 539 Hope St., Bristol, Conn., **$58,565.** Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., engrs. CD 10/29/47.

S. D., Plankinton—City, July 5, sewers from Ferguson & Pederson, Plankinton, **$62,017.** CD 6/29.

Wis., La Crosse—City, La Crosse, July 6, 26,490 ft. 8 to 72 in. storm sewers, 67 manholes, South Side Dist., from Nodland-Alberg Co., Alexandria, Minn., **$225,941.** CD 6/29.

Tex., Houston—M. H. Westerman, secy., City Hall, 900 Brazos St., cancelled bids to have been opened July 28, 5 water supply wells, Nineteenth and Nicholson Pump Station zone, $150,000; 2 water supply wells, northeast sect. of city, $55,000. CD 6/28.

CONTRACTS AWARDED

Ga., Rochelle—City, sanitary sewer imprvs., to M. G. Aldridge, Macon, **$84,858.** Bids 7/7. CD 6/27.

N. J., Trenton—Hamilton Twp., Committee, 2090 Greenwood Ave., sanitary sewers exten., S. Broad St., to Hartman & Riley, Mercerville, **$62,000.** Bids 6/7.

O., Cleveland — City, City Hall, storm and sanitary sewer 2,220 ft. 48 to 60 in. concrete pipe, Terminal to Lakata Aves., and storm and sanitary sewers, 850 ft. concrete pipe culverts, standard manholes W. 143 to W. 140 Sts. to Kassauf Co., 3816 Trent Ave., **$91,725.** Est. $108,000 and **$76,806.** Est. $116,000 respectively. C. J. Wenrick, city engr. Bids 7/4. Awarded 7/12.

O., Euclid—City, 585 E. 222 St., storm sewer, appurtenances in E. 215 St. to Nicholas Ave., to Curro Constr. Co., 787 Union Commerce Bldg., Cleveland, **$89,990.** Est. $90,000. CD 11/22/48.

Pa., Pottstown — Pottstown Boro, sewers various locations to D. Richard Jaffola, Boyertown. Approx. **$50,000.** CD 12/28/45.

Tex., Waxahachie — City, sanitary sewers force-account. **$60,000.** CD 3/30.

Utah, Ogden—City, c/o Mrs. Cinda M. Barrett, Redr., City Hall, 26 blocks sanitary sewer to R. W. Coleman, Clearfield, **$78,163.** C. R. Kimball, city engr. Bids 7/5.

Wis., Milwaukee—City, City Hall, sanitary and storm sewers S. 35 St., to L & L Service Co., 906 E. Center St., Zone 12, **$57,110.** Bids 7/12, awarded 7/14.

N. B., Moncton — Municipality, c/o L. T. Tingley, city clk., incinerator, to F. Hankin & Co. Ltd., 57 Bloor St. W., Toronto, Ont., **$125,589.**

Ont., Toronto—City, H. E. McCallum, mayor, City Hall, sewer, Dufferin St. A and B, to Commissioner of works, City Hall. Approx. **$56,835.** M. Stewart, c/o owner, engr.

Ont., Toronto—Municipality, sewers, Petersborough Ave. and Norton Ave. Own forces, **$56,835.** M. Stewart, city engr. CD 8/10/44.

LOW BIDDERS

●**N. Y., New York**—Dept. P. Wks., Municipal Bldg., Zone 7, July 18, Contr. 1, structures, Contr. 2, plumbing for Gansevoort Destructor Plant, electrical work, Contr. 3, heating; Contr. 4 plumbing Waterfront Disposal Station, foot of Bloomfield and Gansevoort Sts. from J. Rich Steers Co., 17 Battery Pl., Zone 4, **$1,180,000.** CD 7/14.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

August 2	**August 5**
Maryland	**Pennsylvania**
	Washington
August 4	
Michigan	**August 11**
New Jersey	**New Jersey**

August 2

Ont., Fort William—Canadian Pacific Railway Co., J. E. Armstrong, ch. engr., Windsor Station, Montreal, Que., bridge over Canadian Pacific Railroad tracks, Pacific St. Approx. $250,000. T. W. Creighton, c/o owner, engrs. CD 4/18/47.

August 10

California—State Div. Hys., State Bldg., Los Angeles,

San Bernardino Co.—18 timber trestle bridges in part with plank floors and plant mix resurf. between 87 and 120 mi. east of Bartow.

September 1

●**Virginia**—State Hy. Dpt., Richmond,

York and Gloucester Counties — 3,750 ft. series of girder truss and movable swing spans, deck type construction bridge over York River at Yorktown, between Yorktown and Gloucester Point. Approx. $7,000,000. CD 3/18.

LOW BIDDERS

California — State Div. Hys., Sacramento, July 13, rein.-con. bridges and culvert, grading, surfacing approaches across Burney Creek, west branch and east branch of Burney Creek, from Metzger Co., Box 266, San Pablo, **$97,410.** CD 6/22.

Illinois—State Hy. Dpt., Springfield, July 15, substructure, paved approaches and steel, grade separation, Ill. Rt. 99 and Pratt Ave., Cook Co., from Kenny Constr. Co., 111 W. Washington St., Chicago, **$128,088.**

Illinois—State Hy. Dpt., Springfield, July 15, substructure, paved approaches and structural steel for grade separation, Ill. Rt. 99 and Devon Ave., Cook Co., from M. J. McDermott & Co., 30 N. LaSalle St., Chicago, Zone 2, **$244,633***** two bridges, Ill. Rt. 808, Wabash and Edwards Counties, from G. A. Allen, 804 N. Fifth St., Vincennes, Ind. **$92,344.**

Kentucky—State Hy. Dpt., Frankfort, rejected bids June 24, flooring for bridge, over Green River, and navigation light sys., Morgantown-Hartford Rd., F 125 (20), SP 16-36, Butler Co., L. B. **$156,630.** CD 6/30, under LB.

Maryland—State Hy. Dpt., Baltimore, single 72 ft. span, steel girder bridge over Georges Creek, Washington St., Westernport, incl. removal existing bridge, alterations and extens. to substructure, Contr. A 419-1-615, Allegany Co., from John D. Sheetz Constr. Co., Halethorpe, **$59,929.**

Maryland—State Hy. Dpt., Baltimore, July 14, dredging for relocation Sandy Point Ferry slip channel, Chesapeake Bay Bridge, Sandy Point, Anne Arundel Co., Contr. 10-4-87, base bid from Booth & Flynn, 1942 Forbes St., Pittsburgh Pa., **$495,566;** Alternate 1, west abutment and H pile bents, steel frame, and Alternate 2, west abutment, H. pile bents, concrete frame, from Baltimore Contractors, Newgate Ave. and Newkirk St., Baltimore, **$599,516** and **$537,898** respectively. CD 6/15.

Michigan—State Hy. Dpt., Lansing, July 12, bridge carrying Livernois Ave. over Edsel Ford Expressway, UI B 21 of 82-22-10 C-1 Wayne, Co., from Louis Garavaglia, 20240 Mound Rd., Centerline, **$197,384.** CD 6/30.

Maryland—State Hy. Dpt., Baltimore, July 19, East Abutment and pile bents, 30 to 65 using cast in place concrete piles, Chesapeake Bay Bridge, Stevensville and Sandy Point, C'HB 10-5-87, Queen Anne and Anne Arundel Counties, from Booth & Flynn, 1942 Forbes St., Pittsburgh, Pa., **$556,051,** Est. $340,314, alternate 1, using steel H piles, alternate 2, using concrete frame bents, on steel H piles, from Baltimore Contractors Inc. Newgate Ave. and Newkirk Rd., Baltimore, **$599,715** and **$544,010** respectively, Est. $357,864 and $362,-377 respectively. CD 6/22.

†Texas—U. S. Eng., 606 Santa Fe Bldg., Galveston, July 14, rein.-con. substructures for Towash and Steeles creeks and Brazos River Bridge, M.K.T., Ry. track relocation proj. Inv. No. Eng-41-243-49-303 from Massman Constr. Co., 71 By-Pass, Kansas City, Mo., **$680,393.** Est. $2,000,000. CD 6/20.

Virginia—State Hy. Dpt., Richmond, July 19, 378 ft. bridge across Notoway River and 0.18 mi. approach road south of Concord Church, Secondary Route 619, Sussex and Greensville Counties from Donald H. Selvage, Amherst, **$63,488.**

CONTRACTS AWARDED

Kansas—State Hy. Dpt., Emporia, three 80x100 ft. continuous steel girder spans, Br. 50-S-56 13.1 St. 167 plus 10, S.P. 50-S-56 FI-608 (6), Lyon Co., to E. W. Geiger, Leavenworth, **$71,339.**

Maine—State Hy. Dpt., Augusta, Mechanic Falls Bridge, Mechanic Falls, F. A. P. 106 (9), Androscoggin Co., to Herbert E. Callahan, Inc., Auburn, **$163,354.** Bids 7/3. CD 7/5.

Michigan—State Hy Dpt., Lansing, grade separation viaduct carrying U. S. 31 (relocation) over C. & O tracks, UI XI of 11-18-7 C-2, Berrien Co., to L. W. Lamb, Holland, **$599,899.** Bids 5/13. CD 7/14, under LB.

Oklahoma—State Hy. Dpt., Oklahoma City, 210 ft. I-beam span bridge, approaches at Elk Creek near Sentinel, Washita Co., to W. E. Logan & Sons, Barnes Bldg., Muskogee, **$100,-982.** Est. $116,872. Bids 7/12.

Washington—State Hy. Dpt., Olympia, reconditioning buoyancy units on Lake Washington Bridge, King Co., to Gilbert Pile Driving Co., Mercer Island, **$63,415;** grading, reconstructing portions of concrete girder bridge over Methow River on Primary State Hy. 16, E. R. P. No. ER-4 (10) Unit 2, Okanogan Co., to Everett McKellar, Chelan, **$94,425.** Bids 7/15. CD 6/30.

STREETS AND ROADS

STATE HIGHWAY LETTINGS

August 2	**August 5**
Maryland	**Minnesota**
	Pennsylvania
August 4	**Washington**
Michigan	**August 10**
New Jersey	**Delaware**
	Louisiana

August 1

Mass., Roxbury—City, Dpt. P. Wks., City Hall Annex, Boston, sheet asph. paving, Geneva Ave., etc., Approx. $75,000. Plans deposit $5.

N. Y., Binghamton—Broome Co. Hy. Dpt., Binghamton, 2.29 mi. New Ireland-Airport County Road No. 71, Part 2, Proj. No. 91. $210,000. Plans deposit $5.

N. Y., Kew Gardens—President Queens Boro, 120-55 Queens Blvd., Zone 15, regulating, grading sidewalk and gutter areas, curbing, laying sidewalks, etc. 145 St.; regulating, grading, curbing, laying and relaying sidewalks, etc., 73 Pl.; regulating, grading outside paved area, curbing, recurbing, laying and relaying sidewalks, etc., Little Neck Pkway.; regulating, grading, curbing, laying sidewalks, etc., Juniper Valley Rd.; grading, curbing, flagging, asph. bridge, paving, etc., Vleigh Pl. and 72 Ave. CD 7/16/48.

August 2

Kan., Ness City—Nell C. Nye, city clk., City Hall, street improvs., incl. 8,100 cu. yd. grading, curb and gutter, manholes, storm sewer, sidewalk, etc. Plans deposit $10. Wilson & Co., 223 N. Santa Fe. St., Salina, engrs.

Minn., Grand Rapids — Itasca Co., R. J. Waaling aud., Grand Rapids, bit. stabilized base and road mixed bit. surf. 5.6 mi. between T. 54 N. and T. 55 N. R. 25 W. S. of Deer River, S. P. 31-502-06 (SAR 11), Minnesota Proj. S. 217 (5), Plans deposit $0.50; 6.3 mi. between T. 56 N. at Talmoon and Spring Lake S. P. 31-501-11 (SAR 4), Minnesota Proj. S. 66 (8), Plans deposit $0.50; 2.2 mi. between SAR 7 at Snaptail Lake and 2.2 mi. east, S. P. 31-511-04 (SAR 8) Minnesota Proj. S. 812-(5), Plans deposit $0.50; 8.1 mi. between 5.8 mi. N. W. of South Line Itasca Co. and Junction T. H. 24, 2 mi. west of Jacobsen, S. P. 31-503-04 (SAR 3) and S. P. 01-506-03 (SAR 10), Minnesota Proj. S 215 (2), Plans deposit $0.50. Approx. $50,000. H. A. LeSueur, co. engr.

†West Virginia—Bureau of Public Roads, General Services Admin., 1440 Columbia Pike, Arlington, Va.,

Hardy Co.—constructing 7.628 mi. West Virginia Forest Hy. Proj. 94-A, (George Washington National Forest). H. J. Spelman, div. engr.

August 4

Ont., New Toronto—F. R. Longstaff, town clk., asph. paving, curbs and gutters, R. M. Nicholson, 877 Lake Shore Rd., engr

August 5

†Missouri—Bureau P. Rds., General Services Admin., c/o Dist. Ranger, U. S. Forest Service, Willow Springs, grav. surf. 1.347 mi. Missouri Forest Hy. Proj. 33-B, Part 2, Douglas Co., Plans deposit $10., H. J. Spelman, div. engr.

August 8

†Alaska—Bureau Public Roads, General Services Admin., Juneau,

Ketchikan—clearing, grubbing, grading, surf. and bridge 1.5 mi. Tongass Hy. Proj. 1-B7, G3, clearing, grubbing, grading, surf. draining, construct rein.-con. bridge 2.703 mi. Tongass Hy. Proj. 1-D6, E4. Plans deposit $10 each. CD 8/17/45.

August 9

Minn., Caledonia—Houston Co. M. C. Corcoran, Caledonia, grade, box culverts, grav. surf. 6 mi. between 6 mi. west of Trunk Hy. 76 and TH 76, S. P. 28-503-01 (SAR 4), Minn., Proj. S 325 (1), $65,000. Plans deposit $2.50. H. M. McLaind, co. hy. engr.

Minn., International Falls—Koochiching Co., O. H. Gordon, aud., International Falls, area, grav. surf. 6.6 mi. between Trunk Hy. 71 and International Falls, $50,000. Plans deposit $1.25, V. E. Crabtree, co. hy. engr.

N. Y., Rego Park—New York City Housing Auth., 63 Park Row, New York, Zone 7, asph. paving Rego Park Houses, Proj. No. NYV 30197-C. Queens Boro. Plans deposit $25

August 15

†Mississippi—National Park Service, Dpt. Interior, Admin. Bldg., Natchez Trace Parkway Headquarters, Tupelo,

Lee Co.—grav. surf. headquarters road, Natchez Trace Parkway, east and west side U.S. Hy. 45, north of Tupelo, Plans deposit $10.

Bids Asked

Tex., Bellaire—J. S. Norman Building Corp., 4815 Richmond Rd., Houston, asph. paving and construction, concrete curbs and gutters area of Long Point and Teich Rds. $75,000. Hilton & Coulson, 3821 Fannin St., Houston, engrs.

LOW BIDDERS

Alabama — State Hy. Dpt., Montgomery, July 15, grading, drainage and single surf. tr. 6.439 mi. on county road from Fitzpatrick toward Union Springs, Bullock Co., from Joe P. Walters, Troy, **$72,502***** base and surf. 10.179 mi. on Rd. from Butler to Lisman, Choctaw Co., from E. J. Cobb Constr. Co., Montomery, **$56,563***** base and surf. 11.637 mi. on county road between Alba and the Pike County line, Coffee Co., from Prandtgraff Constr. Co., 4708 N. Court St., Montgomery, **$57,718***** plant seal mix 39.366 mi. on roads from Camden to Monroeville, from Monroeville toward Beatrice and Grove Hill, Monroe and Wilcox Counties, from Georgia-Alabama Paving Co., 2011 Andrews Rd., Columbus, **$157,255***** grading, drainage and bridge 8.35 mi. on county road from Alabama 40, near Aliceville N.E. through Olney, Pickens Co., from J. Cousins, 18 S. Lewis St., Montgomery, **$80,427.**

Arizona—State Hy. Dpt., 17 Ave. and Jackson St., Phoenix, bit. 1¾ mi. Perkinsville-Williams Hy., Coconino Co., from John C. Kelton Co., 4525 N. 7 St., Phoenix. **$52,164 *****surf. 39 mi. Tucson-Ajo Hy., Pima Co., from Larson Contracting Co., 2028 S. 7 St., Phoenix, **$179,986***** bit. 3 mi. Black Canyon Hy. from Maricopa-Yavapai Co. line north, Yavapai Co., from Vinnell Constr. Co., Inc., Alhambra, **$234,494.**

California—State Div. Hys., Sacramento, July 13, plant mix surf. on new grade and existing surf. 4.4 mi. between Rt. 83 and end of Chester Causeway, Plumas Co., from Clemente & Co., Box 277, Hayward, **$145,734.** CD 6/22.

Colorado—State Hy. Dpt., Denver, July 14, grading, surf., structures 5.080 mi. located State Hy. 131 from 1.8 mi. north of Hayho southerly to Oak Creek City limits, Colo. Proj. S 0121 (3) Routt Co. from Schmidt Constr. Co., Grand Junction, $237,514, est. $246,581. CD 7/7

Connecticut—State Hy. Dpt., Hartford, July 18, grading, draining, 8,895 lin. ft. East Hartford-Glastonbury Expressway, twin 8x8 ft. rein.-con. box culvert, Porters Frog Brook, twin 8x10 ft. rein.-con. box culvert, Salmon Brook, grav. 932 ft. service road, Griswold St. to Spring Sts. FAP U-46 (4), East Hartford-Glastonbury, from Arute Brothers, Inc., 560 S. Main St., New Britain, **$316,956;** b. conc. 14,100 lin. ft. rein.-con. slab bridge extens., N. Madison Rd., Rt. 79, Madison, from Elm City Constr. Co., Hamden, **$169,148.** CD 7/7.

Delaware—State Hy. Dpt., Dover, July 13 bit. Contr. 1053, New Castle Co., from Henry T. Eastburn & Sons, Newark, **$73,105**; bit. Contr. 1054, Kent Co. and Sta. Contr. 1055, Sussex Co., from Delmarva, **$53,836** and **$95,-593** respectively. CD 6/20.

●**Illinois**—State Hy. Dpt., Springfield, July 15, c. conc. 0.94 mi. Ill. Rt. 135, Piatt Co., from Eric Bolander Constr. Co., Winchester Rd., Libertyville, **$136,487*****bit. resurf. 3.94 mi. Ill. Rts. 57, 3A, 118 and 135, Cook Co., from Arcole Midwest Corp., 3225 Main St., Evanston, **$199,196*****bit. resurf. 10.02 mi. Ill. Rt. 92, Bureau Co., from Arrow Petroleum Co., 7419 Franklin St., Forest Park, **$374,950***** grav. crushed stone surf. course 2.38 mi. Ill. Rt. 808, Wabash and Edwards Counties, from D. M. Lake Constr. Co., Box 109, Shelbyville, **$79,061*****bit. resurf. 10.51 mi. Ill. Rt. 1 and U. S. 45, White Co., from Jefferson Asphalt Co., 1209 Casey St., Mt. Vernon, **$391,982***** resurf. 20.48 mi. Ill. Rt. 159, St. Clair, Monroe and Randolph Counties, from Payne & Bolau Inc., 20 N. Wacker Dr., Chicago, Zone 6, **$864,198*****grav. or crushed stone surf. course 4.61 mi. Ill. Rt. 572, incl. bridge and bridge widening, Mason Co., from I. D. Lain Co., 1901 E. Adams St., Springfield, **$97,790*****bit. resurf. c. conc. patching, 5.37 mi. Ill. Rt. 3, Randolph Co., from Charles G. Gilmore Asphalt Products, Anna, **$258,187***** resurf. 8.24 mi. Ill. Rt. 53, 133 and 091, Gallagher Asphalt Co., 181 St. and Indiana Ave., Thorton, **$311,906** ***bit. resurf. 3.28 mi. Ill Rts. 19 and 42, from Black Top Roads Co., 1929 N. Narragansett St., Chicago, Zone 39, **$137,064** both Cook Co. ***c. conc. paving 10.14 mi. U. S. Rt. 40, Cumberland Co., from Standard Paving Co., 30 N. LaSalle St., Chicago, Zone 2, **$998,500*****bit. resurf. 2.54 mi. U. S. Rt. 51, LaSalle Co., from J. P. Wetherby Constr. Co., 218 W. Main St., Ottawa, **$101,717*****bit. resurf. 8/98 mi. U. S. Rt. 50, Marion and Clinton Counties, from Trinidad Asphalt Mfg. Co., 600 S. Theresa Ave., St. Louis, Zone 3, Mo., **$366,303.**

Kentucky—State Hy. Dpt., Frankfort, rejected bids July 8, traffic bound limestone 8.574 mi. Part 1 and 2, TBS, RS 104-238, Russell Co. L. B. **$160,874**; traffic bound gravel 5.53 mi. Owenton-New Liberty Rd., RS-94-373, Owen Co., L. B. **$52,645.** Will readvertise, CD 7/15, under LB.

Louisiana—State Hy. Dpt., Baton Rouge, July 13, shaping roadway, small drainage structures, bit. surf. tr. 7.7 mi. South Bend-Bayou State Hy., State Rt. 60, S.P. 243-01-02, St. Mary Parish, from Stevens & Co., Inc., Whitney Bldg., New Orleans, **$117,934***** shaping roadway, small drainage, structures, aggregate type base course, 4.6 mi. Bentley-Colfax Hy. State Rt. 19 S.P. 40-01-12, Grant Parish, from Campbell Constr. Co., Inc., Foot Milam St., Shreveport, **$51,298*****c. conc. 0.884 mi. intersection Rt. 63, Hy. State Rt. 63, Hy. State Rt. C-2016, S.P. 817-18-04, L.S.U. East Baton Rouge Parish, from Barber Bros. Co., Reymond Bldg., Baton Rouge, **$125,356.** CD 6/22.

Maryland—State Hy. Dpt., Baltimore, July 12, furnishing, delivering, applying, b. conc. 4.048 mi. State Rt. 410, Contr. M 443-315, from A. H. Smith, Branchville, **$231,016**; 2.37 mi. 2 Ave., Franklin Ave. and Blair Rd., Contr. M 458-315, from McGuire & Rolfe Inc., First and O Sts., S. E., Wash., D. C., **$82,914**, both Montgomery Co.

Md., Baltimore—Mayor & City Council, City Hall, July 13, sheet asph. resurf. Hy. Contr. 1000, from Arundel Constr. Co., 4420 E. Eager St., **$158,572**; macadam street paving Hy. Contr. 996, from National Paving & Contrg. Co., 4200 Mortimer Rd., **$39,952.** CD 7/7.

Massachusetts—Commonwealth of Massachusetts, Dpt. P. Wks., 100 Nashua St., Boston, July 12, hy. work, Washington St., Quincy, from Charles Capone Constr Co Inc., 44 Wellesmere Rd., Roslindale, **$56,096.** CD 7/7.

Mass., Roxbury—City of Boston, P. Wks. Dpt., City Hall Annex, Boston, July 12, sheet asph. paving, Akron St., etc., from E. M. Matz Constr. Co., 25 Huntington Ave., Boston, **$55,898.**

Mass., Worcester—City, Dpt. P Wks., City Hall, July 11, approx. 3,270 ft. Public St., from B. N. T. Sand & Gravel Co., 32 Wilson St., **$50,527.**

Michigan—State Hy. Dpt Lansing July 12, b. conc. 4.55 mi. M 54, b. conc. 3.45 mi. M 51, M 77-44e C-3 and M 77-17 C-7 St. Claire Co., from Cooke Contg. Co., 1116 Penobscot Bldg., Detroit, Zone 26, **$126,374*****b. conc. 0.68 mi. M 40, Berrien Co., b. conc. 1.42 mi. M 40, Berrien Co., and b. conc. 5.96 mi. M 40, Cass Co., from Reith Riley Constr. Co. South Bend, Ind., **$127,790*****b. conc. resurf., etc. 10.277 mi. U.S. 23, F 9-45 C-1, Bay Co., from Bridgeport Core Sand Co., 145 Davenport, Saginaw, **$463,-819.** CD 7/7.

†**Minnesota**—Bureau P. Rds., General Services Admin., 214 Globe Bldg., St. Paul, July 8, road mixed or plant mixed bit. surf. 12.681 mi. Minn. Hy., Forest Proj., Lake Co., from Armel Constr. Co., Robbinsdale, **$52,323.** CD 6/16.

Minn., Minneapolis—Hennepin Co., R. F. Fitzsimmons, aud., July 11, grading, paving, S. P. 27-501-03 (SAR 7 and 15), Minn. Proj. S 22 (3), from Woodrich Constr. Co., Hopkins, **$105,374.** CD 6/21, under Minn., St. Paul.

Nevada—State Hy. Dpt., Heroes Memorial Bldg., Carson City, July 14, construct 23.33 mi. highway from Sod House to 30 mi. south of Denio, Humboldt Co. from Dodge Constr. Co. Inc., N. Maine St., Fallon, **$396,025.** CD 7/7.

O., Toledo—Lucas County Comrs., Courthouse, July 13, pave Cherry St. from W. Central to Collingwood Blvd. from S. E. Johnson Co., 1214 Cherry St., **$75,218.** CD 6/29.

Oklahoma—State Hy. Dpt., Oklahoma City, July 12, grading, five 60 ft. I-beam span bridge 0.17 mi. Cimarron Co., from Amis Constr. Co., 1647 Exchange St., Oklahoma City, Zone 8, **$59,253,** est. $53,911***stabilized base and rock asph. surf. 4.62 mi. State Hy. 9, Jackson Co., from H. D. Youngman, Baxter Springs, Kans., **$228,068,** est. $211,872***rock asph. on grav. surf. 7.503 mi. Hy. 79, McClain Co., from Smith Bro., Noble, **$300,513,** est. $273,700.

●**Texas**—State Hy. Comn., Austin, July 19, soil asph. base, single asph. surf. tr. 11.08 mi. Hy. FM-359, S-27 (6), S-27 (7), Waller and Fort Bend Counties, from John F. Buckner & Sons, P.O. Box 76, Cleburne, **$178,345.** Est. $185,000***flexible base, double asph. surf. tr. 14.308 mi. Hy. 70, S-1212 (1), Ochiltree Co. and flexible base, single asph. surf. tr. 6.559 mi. Hy. 350, S-323 (3), Mitchell Co., from Cooper & Woodruff, 1203 Dallas Natl. Bank Bldg., Dallas, **$152,023.** Est. $160,000 and **$83,795.** Est. $76,000 respectively***hot mix b. conc. wid'n. 12.878 mi. Hy. U.S. 80, C-96-9 and 10-19 and 10, Harrison Co., from Southwest General Constr. Co., The Argyle, Oak Lawn at Hall, Dallas, **$299,365.** Est. $285,-000***grading, pavement wid'n. 1.298 mi. U.S. Hy. 298 and 87 and State Hy. 152, C-66-5-11, 425-2-7 and 557-1-4, Moore Co., from Bell, Braden, Barker & Colvin, Inc., Herring Hotel Bldg., Amarillo, **$65,379.** Est. $70,000***curb and gutter, flex. base, surf. tr. and b. conc. 7.086 mi. Hy. FM-565 and Loop 207, S-1128 (1) and C-389-10-1, Chambers Co. and grading and drainage structures 8.361 mi. Hy. 200, F-1051 (4), Coleman and Runnels Counties, Cottrell Co., 1901 Meadowbrook St., Austin, **$190,254.** Est. $167,000 and **$209,839.** Est. $220,000 respectively***culverts and roadbed tr. 7.272 mi. Hy. U.S. 77, FI-117 (5), Denton Co., from Spencer Constr. Co., Carrollton, **$805,161.** Est. $290,000***base and asph. surf. 13.822 mi. Hy. FM-869, S-1222 (1), Reeves Co., from Hugh McMillan, P.O. Box 1227, El Paso, **$99,397.** Est. $125,000***roadbed tr. and hot mix b. conc. with seal coat Hy. Dist. No. 19, F-1076 (6) and (7), Refugio and Golida Counties, from J. M. Dellinger, Inc., P.O. Box 1356, Corpus Christi, **$235,316.** Est. $215,000*** flexible base, asph. surf. tr. 9.366 mi. Hy. FM-198 and FM-895, Delta Co., from L. W. Pepper Co., Gladewater, **$187,756.** Est. $157,000 ***flexible base, single asph. surf. tr. 9.061 mi. Hy. FM-889, S-1268 (1), Live Oak Co., from South Texas Constr. Co., P.O. Box 1673, San Benito, **$64,886.** Est. $75,000***flexible base, single asph. surf. tr. 8.896 mi. Hy. FM-608, S-970 (2), Nolan Co., from Strain & Brown, Inc., Box 1057, San Angelo, **$74,924.** Est. $52,-000***asph. surf. 2.529 mi. Loop 13, F-1075 (1), Bexar Co., from Page, P.O. Box 1181, Austin, **$239,858.** Est. $220,000***flexible base, single asph. surf. tr. 17.49 mi. Hy. U.S. 80, F-52 (13) and FI-52 (14), Callahan Co., from Harry Campbell, 2854 Berry St., Fort Worth, **$141,266*****flexible base, single asph. stabil. base, single asph. surf. tr. 12.350 mi. Hy. 121, F-1085 (9), Collin Co., from R. W. McKinney, P.O. Box 190, Nacogdoches, **$483,-557.** CD 6/29 and CD 7/12.

Tex., Corpus Christi—Nueces Co., Corpus Christi, July 11, flexible base course and asph. surf. 11.23 mi. Precinct 1 and 13.1 mi. Precinct 4 from Heidenfels Bros., 521 McBride Lane, **$50,242.** Est. $115,000 and **$52,102.** Est. $130,000 respectively***flexible base course, asph. surf. 6.91 mi. asph. seal coat 6.91 mi. Precinct 2 and flexible base road course and asph. surf. 20.47 mi. Precinct 3 from T. C. Cage & Glesen Bros., 3401 Monterrey St., **$58,894.** Est. $90,000 and **$96,280.** Est. $190,000 respectively. CD 6/29.

†**Tex., Fort Sam Houston**—U. S. Eng., 606 Santa Fe Bldg., Galveston, modification of road facilities, Fort Sam Houston National Cemetery, Eng-41-243-49-337 from R. E. Lanham, 715 E. Josephine St., San Antonio, **$58,738.** Est. $44,066. CD 6/9.

●**Virginia**—State Hy. Dpt., Richmond, July 19, from Echols Bros., Inc., Staunton, macad. 1.34 mi. U.S. 211, from intersection U.S. 11 at New Market, Shenandoah Co., **$53,673***** from T. E. Brown, Charlotte, N. C., traffic circle at Intersection Route 161 (Belt Blvd.) west of Richmond, U.S. 360, Chesterfield Co., **$106,668*****from Moore Bros., Staunton, macad. 3.4 mi. Route 42 north from corporate limits of Harrisonburg, Rockingham Co., **$157,055***** from Addams & Tate Constr. Co., 2725 Roanoke Ave., Norwich, Roanoke, grading, surf. 8.73 mi. Secondary Routes 627, 660, 710, 661, 676 and 619, near Fort Blackmore, Scott Co., **$118,814;** grading, hard surf. 6.84 mi. Secondary Route 649, between Omaha and Wise County line, Dickenson Co., **$81,194;** grading, hard surf. 5 mi. Secondary Route 660 from Route 656 to Route 691, Grayson Co., **$74,540;** grading, hard surf. 5.61 mi. Secondary Routes 626 and 603 from Toteds to U.S. Route 11, Montgomery Co., **$49,592*****from H. R. Nuckols, Hollins, stabil. base 6.32 mi. Secondary Route 648, north of Naruna, Campbell Co., **$57,004***** from C. M. Moyer, Staunton and Virginia Asphalt Paving Co., 437 Mc Clanahan St., Roanoke, grading, hard surf. 6.48 mi. Secondary Route 608, between Fishersville and New Hope, Augusta Co., **$78,766*****from Richard F. Kline, Md., grading, hard surf. 5.11 mi. Secondary Route 707, between Rivercombs Corner and Culpeper Co. line, Rappahannock Co., **$86,561;** grading, hard surf. 5.71 mi. Secondary Route 672, between Lovettsville and U.S. 15, Loudoun Co., **$88,516.** CD 6/30.

Wash., Tacoma—City, City Hall, b. conc. Center St., Wilkeson to Gunnison, L.I.D.s 4448 and 4459, from Woodworth & Co., 1200 East D St., **$91,307.** D. E. Morris, city engr.

†**Washington**—Bureau Public Roads, General Services Admin., Broadway and Oak Bldg., Portland, Ore., July 12, grading and 3 bridges 3.7 mi. South Fork Stillaguamish Hy., Snohomish Co., from Oaberg Constr. Co., 1132 N. 128 St., Seattle, **$205,632.** CD 7/6.

CONTRACTS AWARDED

Ga., Carrollton — Carroll Co. Bd. Rd. & Revenue Comrs., paving on various county roads, to W. L. Cobb Constr. Co., 106 E. Ponce de Leon St., Decatur, **$59,889.** Bids 7/15.

Ga., Griffin—Spalding County Bd. Road & Revenue Comrs., Griffin, improv. 17 mi. county roads, to George C. Blount & Son, 29 Golf Circle N.E., Atlanta, **$56,020.**

Ia., LeMars—Plymouth Co., LeMars, road grading, to Scothorn Constr. Co., Cherokee, **$58,589.** E. E. Nelson, co. engr. Bids 6/29.

Kansas—State Hy. Dpt., Emporia, base and dense graded surf course 10.312 mi. 50 N 56 F 419 (12), Lyon Co., to Concrete Materials & Constr. Co., Granby Bldg., Cedar Rapids, **$309,336.** Bids 7/13. CD 6/29.

Kansas—State Hy. Dpt., Yates Center, grading, base course 6.995 mi. 75-104 F 418 (6), Woodson Co., to M. W. Watson, National Bank of Topeka Bldg., Topeka, **$187,516.** Bids 7/12. CD 6/23.

Kansas—State Hy. Dpt., Abilene, bit. reconstruction, single asph. surf. tr, 13.95 mi. 9-101 K 2207 (1), Washington Co., to A. F. Reis, National Bank of Topeka Bldg., Topeka, **$62,041;** CD 6/10.

Kansas—State Hy. Dpt., Stockton, grading, 7.261 mi. 18-82 F 340 (12), to Reinhardt Bros., Russell, **$91,197;** base and dense graded surf. course 11.854 mi. 18-82 F 565 (6), Pt. 1 to Inland Constr. Co., 2867 Ellsworth St., Omaha, Neb., **$203,101,** both Roods Co. Bids 7/8. CD 6/23.

Kan., Salina—City, Charles E. Banker, clk., City Hall, street imprvs., incl. 10,800 cu. yd. grading, 8,400 lin. ft. concrete curb and gutter, 31,700 sq. yd. reinforcem. paving, to W. J. Taylor Constr. Co., United Bldg., Salina, **$121,-112.** Bids 7/11.

Maine—State Hy. Dpt., Augusta, b. conc. 8 mi. H Fairfield Fairfield and Skowhegan, Maintenance Betterment Proj. 339, Warren Co., Warren Bros. Roads Co., 38 Memorial Dr., Cambridge, Mass., **$70,091.** Bids 7/13. CD 7/7.

●**Maryland**—State Hy. Dpt., Baltimore, grading, drainage surf. 3,466 mi. dual highways, Parole, Anne Arundel Co., Contr. AA 389-2-315 to Nello L. Teer Co., Durham, N. C., **$1,411,110.** Bids 6/28. CD 7/5, under LB.

†**Md., Edgewood**—U. S. Eng., First and Douglas Sts., N.W., Wash. 25, D. C., resurf. roads, Army Chemical Center, Serial No. Eng-49-088-49-206 (59)M, to Harford Constr. Co., Bel Air, **$64,129.** Bids 6/27. Awarded 6/28. CD 6/21.

Mass., Dorchester—City of Boston, P. Wks., Dpt., City Hall Annex, Boston, sheet asph. paving, Dorchester Ave., Baker & Cox Inc., 2472 Washington St., Jamaica Plain, **$54,375.** Bids 7/7. Awarded 7/15. CD 7/19, under LB.

●**Nebraska**—State Dpt. Roads and Irrigation, Lincoln, oiled road, stabil. base course, prep. of subgrade, armor coat, bit. mat. surf. 8.6 mi. FA—S-154, Gering-Bridgeport to Lee & Johnson, 215 Insurance Exchange Bldg., Sioux City, Ia., **$173,124;** oiled road, sand grav. stab. subgrade, bit. mat. surf. sand surf. course 6.6 mi. FA—S-121, Grand-Madrid to W. A. Riba, Geneva, **$158,083;** oiled road, sand grav. bit. stab. base course, bit. surf. 5 mi. FA—F-68, Culverston-McCook to Nichols Constr. Co., Geneva, **$95,823.**

oiled road, bit. stab. base course, armor coat 9.5 mi. Patrol SG 66851, Benkelman-Stratton to Francis Orshek, Fremont, **$100,118;** oiled road, sand grav. surf. for detour, stab. base course, armor coat, bit. mat. surf. course 5.8 mi. FA—S-182, Bloomfield east and oiled road, sand grav. for detour, stab. soil base, prep of subgrade, armor coat, bit. stab. base, bit. mat. surf. 5.8 mi. FA—F-95, Joe and 470, Genoa-Monroe and St. Edward-Monroe to Yant Constr. Co., 915 N. 45 St., Omaha, **$123,970** and **$141,650.**

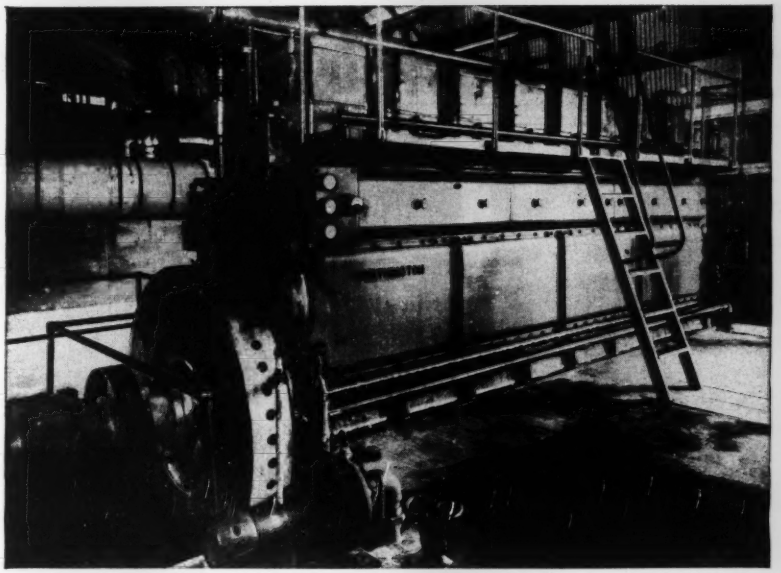
oiled road, grading for detour, sand grav. surf. for detour, culverts for detour, armor coat, bit. mat. surf. 916 mi. FA—F-281, Dunning-Halsey, to Missouri Valley Constr. Co., Omaha Natl. Bank Bldg., Omaha, **$264,-222;** earth road, 3 bridges, guard rail 0.7 mi. FA—F-456, Alma-Franklin to Diamond Eng. Co., Grand Island, **$118,131;** grading and culverts 9.7 mi. FA—F-456, Alma-Franklin to Theisen Bros., Osmond, **$175,837.** Grand total $1,350,988. Bids 7/7. CD 6/27.

●**New Jersey**—State Hy. Dpt., State House Annex, Trenton, surf. 3.4 mi. from Inman Ave., Middlesex Co. to Centennial Ave., Junction of Clark, Linden, Cranford and Winfield Twps., Union Co., to Union Building & Constr. Co., 631 Main Ave., Passaic, **$1,241,114.** Bids 7/7; awarded 7/15. CD 7/13, under LB.

New Mexico—State Hy. Dpt., Santa Fe, bit. top course surf. asph. and stone chip sealing, etc. 11.559 mi. U. S. Hy. 70-80 between Deming

NEWS

FROM THE PUBLIC WORKS FRONT



Worthington Gas-Diesel DDPG-8

Gas Diesel Cuts Fuel Costs 50%

The Hunter Station of Acadia Vermillion Rice Irrigating Company, Inc., located at Milton, Louisiana, provides rice growing farmers with water. The pumping capacity of this plant is about 350,000 gpm. The plant consists of two parts with the older part housing the steam engines.

Three Worthington Diesel engines, connected directly with 48 in. MA-1, Mix-Flo centrifugal pumps, were installed in the modern part of this plant. The first, a DD-8, was installed in 1939 . . . the second (same type) in 1942 . . . a gas Diesel DDPG-8 was put in operation in 1948.

Mr. J. W. Embry is in charge of field operations at this station. He states that he is very well satisfied with the performance of these Worthington Diesels.

According to some figures he worked up on a 24 hour schedule for fuel consumption cost per unit, Mr. Embry made this comparison:

"Steam engine No. 6 at 76 rpm in 24 hours pumps 86,400,000 gallons at a cost of $62.10 gas fuel.

"The gas Diesel at 325 rpm in 24 hours pumps 96,408,000 gallons at an approximate cost of $30.00 gas fuel plus about 4% Diesel fuel."

Worthington Helps in Los Angeles $41,000,000 Hyperion Project

The $41,000,000 sewage disposal project now under construction to give Los Angeles one of the country's most modern sewage treatment systems, will include nine Worthington 1688 hp dual-fuel 8-cylinder engines, to be installed in the power and blower building.

Five of these engines will drive Electric Machinery Co. generators rated at 1189 kw to supply the power for the operation of the sewage treatment plant including motor-driven auxiliary equipment. The engines and generators will be direct-connected and will operate at 360 rpm.

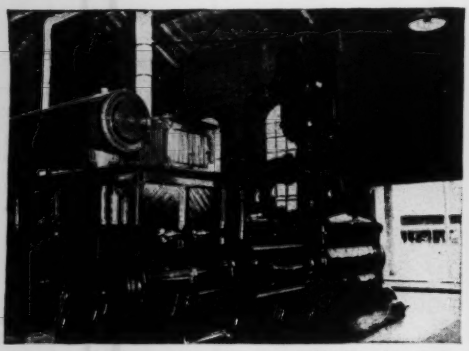
The four remaining engines will drive centrifugal compressors used for supplying air to the aeration tanks. Each compressor is rated at 40,800 cfm of air from an inlet pressure of minus 3 in. of water to a discharge pressure of 7.75 psi. The centrifugal compressors will be driven by the 360 rpm engines through step-up gears to a compressor speed of 3400 rpm.

The exhaust and jacket water heat from all nine engines will be recovered and used to heat the sludge digesters.

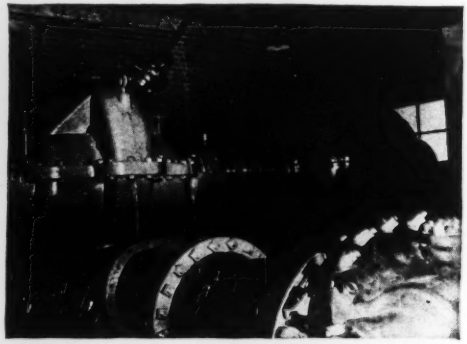
Three Worthington 30" x 12" type DC horizontal duplex vacuum pumps will be installed in the filter and dryer building. These vacuum pumps are to produce the vacuum in the vacuum filters, for sludge filtration, and each will have a capacity of 4705 cfm and will be driven by 150 hp 240 rpm engine-type synchronous motor.

9-26

NEWS from the public works front



Pump installed by a company incorporated by Worthington for Galveston, Texas.



Worthington 20 LA-3 pump and 800 hp G. E. motor at the Fairwood Pump Station in Galveston, Texas.

After 61 Years, Still in Good Condition

In 1888, the City of Galveston, Texas installed 2 modern horizontal compound Duplex Double Acting Pumps in a new pumping station. The pumps were manufactured by a company incorporated into Worthington in 1916.

The large pump is reported to have been rated at 4,000,000 gallons per day at 28 strokes per minute at 60 lb pressure. On Sept. 8, 1900, the City of Galveston suffered a devastating hurricane which resulted in the complete wreckage of the City's main Pumping Plant. Following the storm, the main Pumping Station was rebuilt and the largest of these two pumps was placed in primary distribution pumping service. This pump carried the main load until 1912 when another horizontal steam unit was installed to supplement it. In 1923, it was placed in a standby condition.

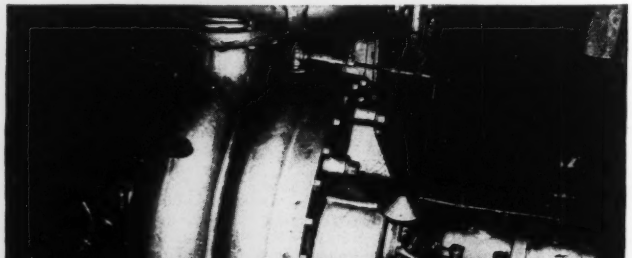
Galveston has now added a 20 LA-3 Worthington Centrifugal driven by 800 hp G.E. Synchronous motor to meet the needs of its growing population.

No Repairs in 37 Years

A Worthington two-stage centrifugal pump that went into operation in 1912 at the Oswegatchie Pumping Station, Ogdensburg, N. Y., has been operating almost continually ever since without one single repair being made on it.

The pump, which is driven from a shaft operated by water power, can pump five million gallons in 24 hours against a 50 foot head, and is idle only when low water or ice conditions prevail. A friction clutch permits disengaging the pump from the drive.

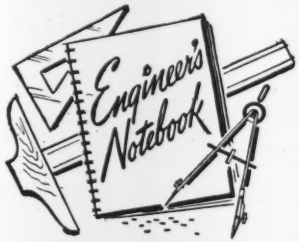
The average daily consumption is 2,500,000 to 3,500,000 gallons.



Worthington 2-stage centrifugal pump at Ogdensburg, N. Y.

Worthington Pump and Machinery Corporation
Harrison, N. J.

NEWS



How Helpful to Centrifugal Pump Users Are the H. I. Specific Speed Limit Charts?

In the United States the basic definition of "specific speed" is the speed in revolutions per minute at which a theoretical and geometrically similar pump would have to run if proportioned to deliver 1 gpm against 1 foot total head at its best efficiency. *It is therefore an index of the pump type using the capacity and head obtained at the maximum efficiency point.*

The specific speed of a pump should be considered as a type number rather than the actual rotative speed of a 1 gpm 1 foot total head model pump, because in most cases such a model pump, if made, would be too small to be hydraulically similar.

The formula for determining specific speed is

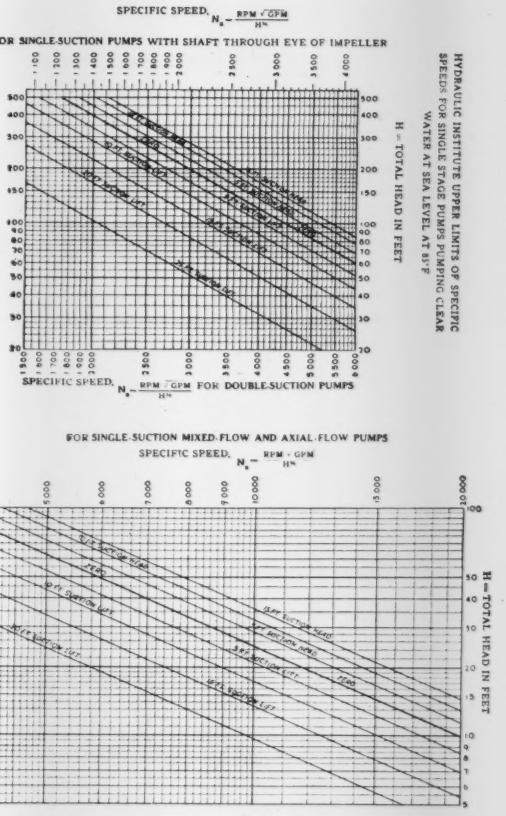
$$N_s = \frac{n \sqrt{Q}}{H^{3/4}}$$

where N_s = specific speed
Q = gpm at speed N and head H
n = rotative speed in rpm
H = total head per stage in feet

The normal range in specific speed encountered in single suction impeller designs is from 500 to 15,000 and 700 to 6,000 in double suction impeller designs. Basically, the lower the specific speed type, the higher the head per stage that can be developed by the pump.

For a given total head and suction lift condition, it has been found from experience that the specific speed of a pump should be below a certain value for successful operation. The Hydraulic Institute has issued a series of charts, the so-called Specific Speed Limit Charts, each applying to a given type of centrifugal pump, showing the maximum recommended specific speed for a combination of total head and suction conditions. It must be realized in using these charts that pumps built for the limit allowed are not necessarily the best design for the intended service. It also must be realized that the individual pump design limits its application for both maximum head and for suction condition limitations. For example, for the 200 feet total head and 15 feet suction lift, the maximum recommended specific speed for a double-suction singie-stage pump is 2130. It does not follow that all double-suction single-stage pumps of 2130 specific speed type are suitable for operation at speeds which will cause them to develop 200 ft total head (at maximum efficiency) . . . nor that the pump, if suitable for operation at 200 ft total head, is suitable for operation with 15 ft suction lift . . . nor that a pump of this type operating against 200 ft total head would on test only be found capable of operating on 15 ft maximum suction lift. These Charts are intended to indicate only the maximum rotative speed for which a centrifugal pump can be designed, according to the latest experience at the time it was made, with assurance of a reasonable and proper operation for the combination of operating conditions.

There are some records of successful application of centrifugal pumps exceeding the Limit Charts. As more data is obtained on such installations, it may be found that the present limits are too conservative. The policy of the various pump manufacturers of offering pumps that are within the Hydraulic Institute recommendations gives purchasers assurance that a trouble-free application should result.


SPECIFIC SPEED, $N_s = \frac{RPM \sqrt{GPM}}{H^{3/4}}$
FOR SINGLE-SUCTION PUMPS WITH SHAFT THROUGH EYE OF IMPELLER
HYDRAULIC INSTITUTE UPPER LIMITS OF SPECIFIC SPEEDS FOR SINGLE STAGE PUMPS PUMPING CLEAR WATER AT SEA LEVEL AT 85°F
H = TOTAL HEAD IN FEET
SPECIFIC SPEED, $N_s = \frac{RPM \sqrt{GPM}}{H^{3/4}}$ FOR DOUBLE-SUCTION PUMPS
FOR SINGLE-SUCTION MIXED-FLOW AND AXIAL-FLOW PUMPS
SPECIFIC SPEED, $N_s = \frac{RPM \sqrt{GPM}}{H^{3/4}}$
H = TOTAL HEAD IN FEET

and Las Cruces, FAP No. FI-19 (2), Luna Co. to W. T. Bookout Constr. Co., Box 298, Las Vegas, **$560,631*****grading, minor drainage structures, watering, rolling, leveling course, etc., 10.644 mi. Hy. Routes 89 and 224 between Weber City and Ranchville. FAP No. S-72 (1), Curry Co. to G. I. Martin, 520 S. Tulane St., Albuquerque, **$91,407*****grading, minor drainage structures, watering, rolling, leveling course, etc. 8.072 mi. Hy. Route 311 between Field and Ranchville. FAP No. S-138 (1), Curry Co. to Wheeler & Trotz, 2129 E. Lead Ave., Albuquerque, **$76,774.** Grand total, $728,812. Bids 7/12. Awarded 7/12. CD 7/5.

N. Y., Binghamton—Broome Co. Hy. Dpt., County Office Bldg., 2.4 mi. roadway West Chenango-East Maine County Roads 71 and 73, Proj. 88, to Binghamton Constr. Co., Inc., 2307 Marine Midland Bldg., **$188,642.** Bids 7/5. CD 6/23.

North Dakota—State Hy. Dpt., Bismarck, grading, air-entrained Portland c. conc. paving, 11.625 mi. U. S. Hy. No. 2 from Manvel to Grand Forks, Proj. No. FI-125 (3) and UI-125 (4), Grand Forks Co. to Okes Constr. Co., 1501 1st Natl. Bank Bldg., St. Paul, Minn., **$850,593.** Bids 6/24. CD 6/30, under LB.

●Oklahoma—State Hy. Dpt., Oklahoma City, reshaping, c. conc. 5.612 mi. U. S. 69 and reshaping, c. conc. 6 mi. U. S. 69, both Atoka Co., to Jack Briscoe, Stillwater, **$221,383,** est. $243,681 and **$257,541,** est. $278,700 respectively ***traffic bound and 2 bridges 5.978 mi. Maysville, Garvin Co., and traffic bound 7.728 mi. and two bridges in Allen, Pontotoc Co., to D. F. Allen, Henryetta, **$59,533,** est. $70,972 and **$98,295,** est. $115,768 respectively***b. conc. 3.617 mi. Blanchard, and b. conc. 6 mi. State Hy. 79, Blanchard, both Grady Co., to Dahlgren & Brooks Insurance Bldg., Oklahoma City, Zone 2, **$103,871,** est. $104,303 and **$312,620,** est. $314,122 respectively***traffic bound and 1 bridge 6.98 mi. Crescent, Logan Co., to Noland Smith, El Reno, **$56,288,** est. $60,039***b. conc. 0.293 mi. S. Hy. 70 and one 150 ft. I-beam bridge Criner, McClain Co., to W. E. Logan & Sons, Barnes Bldg., Muskogee, **$61,302,** est. $73,642***b. conc. 2.987 mi. County Rd north of Bethany, Oklahoma Co., to Metropolitan Constr. Co., 1600 W. Reno St., Oklahoma City, Zone 4, **$102,728,** est. $103,433*** traffic bound, 3 bridges 7.978 mi. Beggs, Okmulgee Co., to Gaines Bros. Co., Miami, **$58,215,** est. $67,600 and total $1,331,766. Bids 7/12. awarded 7/12.

Okla., Oklahoma City—City, City Hall, grading, c. conc. N.W. 33 St. from May to Doxel Sts., to Pennington & Winter, Apco Tower, Zone 2, **$50,662.** Est. $55,000. Bids 7/12, awarded 7/14.

†Oregon—Bureau Public Roads, General Services Admin., Broadway and Oak Bldg., Portland, wid'n and reconstruct 6.4 mi. Alsea Hy. from 12 mi. east of Waldport, Lincoln Co. to K. F. Jacobsen & Co., 0445 S. W. Oak St., Portland, **$195,222.** Bids 7/14. Awarded 7/14.

●Pennsylvania—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg, grading, drainage structures 3.825 mi. for Sect. 27-B, Philadelphia Exten. of Pennsylvania Turnpike beginning at point 800 ft. east of Twp. Rd. 424 in Wallace Twp., then easterly 20,198 ft. to point 600 ft. east of L.R. 147, Upper Uwchland and Wallace Twp., Chester Co., to S. J. Groves & Sons, New Milford, **$2,222,714*****grading, drainage structures paving 4.18 mi. Sect. 27-C, Philadelphia Exten. of Pennsylvania Turnpike from point 700 ft. west of L.R. 147 in Upper Uwchland W. Pikeland and Charleston Twps. and grading, drainage structures and paving 4.43 mi. Sect. 28-A of Philadelphia Exten. of Pennsylvania Turnpike from point 1,400 ft. east of L.R. 15189 in Charlestown Twp., easterly 23,377 ft. point 1,400 ft. east of L.R. 15134, Charlestown Twp., Chester Co., to Lane Constr. Co., 57 Colony St., Meriden, Conn., **$4,881,238.** Bids 7/6. CD 4/11, under LB.

Pa., Philа.—Dpt. Pub. Wks., City Hall Annex, paving, Schedules B-3 and C-1 to Harry C. Erb, 1505 Race St., **$53,054;** paving, Schedules H-1 and B-1 to Mack Paving & Constr. Co., Luzerne and C Sts., **$90,070;** paving Schedules B-4 and F-3 and Schedule 7 to Union Paving Co., Broad and Stiles Sts., **$57,009** and **$98,689** respectively; paving Schedules B-2-5-6 and Schedule 6, and Schedule H-2 to Eastern Asphalt Co., Packard Bldg., **$50,909** and **$122,566** respectively. Grand total $1,018,297. Dudley T. Corning, Highway chief. Bids 6/29.

Tex., Dayton—City, City Hall, asph. paving. Own forces. Approx. **$55,000.** Bids 6/11.

Tex., Fort Worth—Tarrant Co. Courthouse, road reconstr., imprvs., grading, Precinct 1, **$100,000;** Precinct 3, **$90,000,** force account. CD 7/11.

Tex., Fort Worth—Tarrant Co. Courthouse, road reconstruction, imprvs., grading, surf., Precinct 2, force account. **$110,000.** CD 7/11.

Tex., Gilmer—Upshur Co. Courthouse, Gilmer, resurf. oil field roads, Precinct 1. Own forces. **$75,000.**

Tex., Gonzales—Gonzales Co. Courthouse, road construction, surf. off Hy. 90, **$55,000;** road construction between Gonzales and Lavaca county line, **$75,000;** farm to market connecting road between Moulton and Dilworth, **$70,000,** force account. Grand total $200,000. CD 6/2/48.

Tex., Houston— Hamilton Beasley, 2417 Blodgett St., asph. paving in subdivision off west of Airline Rd., to Jim Duff, 150 Alber Rd., **$77,000.**

Tex., San Antonio—V. P. Buchek Co., Major Bldg., asph. paving, grading, drainage streets, parking zone, to Kilgalazier & Huff, 312 Sequin Rd., Approx. **$77,000.** Shoop & Roberts, Olmos Dr., engrs.

Tex., Tahoka—City, K. R. Durham, mayor, street paving and imprvs., 76,360 sq. yds. 6 in. caliche, triple pen. asph.; 59,660 lin. ft. concrete curb and gutters, 54,254 sq. yds. seal coat to Sam Sanders, Artesia, N. M., **$198,899.** Est. $175,000. Bids 6/30. CD 6/13.

Utah—State Road Comn., State Capitol, Salt Lake City, road mixed bit. roadway 27.091 mi. between Delta and Nevada State line, FAP F-235(3), Millard Co., and road mixed bit. roadway 2.042 mi. between Moab and LaSal Junction at Kane Springs, FAP F-6(7) San Juan Co., to Whiting & Haymond, Springville, **$84,951** est. $108,209 and **$164,215,** est. $140,332 respectively. Bids 6/28. CD 6/15.

Utah, Provo—City, c/o I. G. Bench, Recdr., Provo, bit. mat. pavement in Imprv. Dist No. 50 to Griffith, Gornall & Carman, 1057 South 4th West St., Salt Lake City, **$68,135.** Earl Conder, City engr.

Washington—State Hy. Dpt., Olympia, b. conc. 7.457 mi. Primary State Hy. 9 junction with Secondary State Hy. 9-B, to Bogachiel River, Clallam Co., to D-H Paving Co., Vancouver, **$116,393*****clearing, grading, draining and surf., 0.797 mi. Secondary State Hy. No. 13-A, Sampson Rd. to Johns River, F.A.S. No. S-0250 (1), Grays Harbor Co., to Twin Harbor Constr. Co., Raymond, **$135,789***** clearing, grading, draining and surf. 4.862 mi. South, Skagit Co., to Bell Bldg., Tacoma, **$158,-731,** Bids 7/15. Grand total, $782,394. CD 6/30.

Wash., Seattle—City, County-City Bldg., Zone 4, paving streets in area bounded by Snoqualmie and Graham Sts., 18 Ave. S. and Corson Ave. to Seattle Contracting Co., 101 Nickerson St., **$312,768,** est. $331,392. Bids 7/13.

Que., Montreal — Municipality—permanent paving Westbury and Mountain Sights Aves., Mariette St. and Garland Pl. to Charles Duranceau, 2547 Jacques Hertel, **$76,188.** CD 2/23.

EARTHWORK, HARBORS, SEWERAGE

BIDS ASKED

August 2

†Illinois-Missouri—U. S. Eng., 826 U. S. Court House and Custom House, St. Louis, Zone 1, timber piling clump dikes, Powers Island, bank protection, Liberty and Kaskaskia Island, Mississippi River, Serial No. CIVENG 23-065-50-2. CD 7/7—ENR 7/21.

†Missouri—U. S. Eng., 601 Davidson Bldg., 10 E. 17 St., Kansas City, Zone 8, Mo., 11,880 lin. ft. pile dikes, revetment, dike and revetment repairs, Missouri River Sheep Nose to Miami Bends, approx. 289 mi. above mouth and approx. 8 mi. downstream from Waverly, Serial No. CIVENG 23-062-50-7.

†Ohio—U. S. Eng., Madison and 8 St. W., Huntington, W. Va., Pump Stations 1, 3, 7, 8, 9, 10, 11 and 12 equip. installation Local Protection Prog., Portsmouth, New Boston, Serial No. CIVENG-46-022-50-10. Extended date. CD 7/1.

August 3

†Illinois—U. S. Eng., P. O. Box 97, Memphis, Tenn., riverside enlargement, incl. approx. 65,000 cu. yd. earthwork, right bank Ohio River, Cairo and Cairo Drainage Dist., Alexander Co., approx. ¾ mi. above Illinois Central R. R. Bridge, Levee Stations, 7/50 8/8, Levee Item No. R-0-2.1, A. C., Serial No. CIVENG 40-041-50-3.

August 4

†Missouri and Nebraska — U. S. Eng., 1709 Jackson St., Omaha, Zone 2, Neb., river and harbor work, Upper Hemmies-Lower Arago Bends, Holt Co., Mo. and Richardson Co., Neb., near Craig, Mo., Serial No. CIVENG 25-066-50-3.

†Montana—Bureau Reclamation, Dpt. Interior, Columbia Falls, multiple stall garages, conference hall at Hungry Horse Government Camp, 8 mi. east of Columbia Falls, Spec. RI HH8.

†West Virginia—U. S. Eng., Madison Ave. and 8 St. West, Huntington 18, W. Va., grounds and utilities for Bluestone Dam, Bluestone Reservoir Proj., New River. Serial No. CIVENG-46-022-50-11. CD 7/14.

August 5

†Oregon—U. S. Eng., Pittock Block, Portland, Zone 5, flood control works along Santiam River at Wintermantel location, right bank, 8 mi. northwest of Jefferson, CIVENG 35-026 50-2, Linn and Marion Counties.

Tex., Beaumont—Jefferson County Drainage Dist. 6, Beaumont, drainage, straightening of Hillebrandt Bayou and lining with concrete from 16 St. to T. & N. O. Rv. $450,000. Plans deposit $30. Extended date. L. V. Norris, Dist. Eng. CD 7/15; ENR 7/21.

August 8

†Arkansas — U. S. Eng., 300 Broadway, Little Rock, emergency levee repair, Curia Creek Drainage Dist., Black River, White River Watershed, Serial No. CIVENG-03-030-50-5.

Minn., Owatonna — Steele Co., Marion Ditlevson, aud., Owantonna, repair lateral 2 of Judicial Ditch No. 2, incl. approx. 95,001 cu. yd. excavation, etc., $28,247.

August 9

†California — U. S. Eng., Wright Bldg., Sacramento, clean channel in Putah Creek between 1 mi. above U. S. Hy. 40 Bridge and Winters, Spec. 04-167-50-3.

†Illinois — U. S. Eng., 826 U. S. Court House and Custom House, 1114 Market St., St. Louis, Zone 1, Mo., clearing and snagging Macoupin Creek, Greene and Jersey Counties, Serial No. CIVENG 23-065-50-3. CD 7/20.

†Iowa—U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul, 1, Minn., Upper Approach Channel dredging, Lock and Dam 10, Mississippi River, at Guttenberg, Serial No. CIVENG 21-018-50-5. CD 7/12.

About August 10

†Illinois—U. S. Eng., 826 U. S. Court House & Custom House, 1114 Market St., St. Louis, Zone 1, Mo., clearing snagging, Macoupin Creek, vicinity Hardin, Carrollton and Jerseyville, Green and Jersey Counties.

August 11

†Iowa, Missouri and Nebraska — U. S. Eng., 1709 Jackson St., Omaha, Zone 2, Neb., constructing, strengthening and replacing 15,316 lin. ft. dikes, and revetment, Missouri River, Frazers-Lower Brownville Bends, Freemont Co., Ia., Atchison Co., Mo., and Otoe and Nemaha Counties, Neb., near Hamburg, Ia., Serial No. CIVENG 25-066-50-4.

†Louisiana — U. S. Eng., foot Prytania St., New Orleans for removal disposal approx. 5,500,000 cu. yd. material from Calcasieu River and Pass, Calcasieu and Cameron Parishes, Serial No. Eng., 50-1.

August 12

†Arkansas — U. S. Eng., 300 Broadway, Little Rock, emergency levee repairs, Arkansas River Watershed, Faulkner County Levee Dist. No. 1, Arkansas River, Serial No. CIVENG-03-050-50-4.

August 15

†Utah—Bureau Reclamation, Dpt. Interior, 32 Exchange Pl., Salt Lake City, completing 6 mi. Strawberry Duchesne Tunnel Unit of the Provo River Recl. Proj. CD 9/22/48, under LB.

On or About August 15

†Kentucky—U. S. Eng., 302 U. S. Court House, Nashville, Zone 1, Tenn., 270,000 KW Wolf Creek Hydroelectric Power Plant, mile 460.9 on Cumberland River, approx. 10 mi. north of Albany, Russell Co., Serial No. CIVENG -40-058-50-3. CD 6/9/41.

On or About August 16

†Missouri — U. S. Eng., P.O. Box 97, Memphis, Zone 1, Tenn., approx. 610,000 cu. yd. earthwork, left bank St. Francis River, from approx. 8 mi. east of Paragould Ark., down levee approx. 6 mi. to Arkansas-Missouri State Line, Levee Dist. 4, Levee Sations, 28/51-43/44 Levee Item No. L-189 SFR, below Cardwell, Dunklin Co., Serial No. CIVENG 40-041-50-8.

August 16

†California—Bureau Reclamation, Dpt. Interior, Tracy, earthwork, concrete lining and structures, Station 3024 plus 80 to Station 4108 plus 50, Delta-Mendota Canal, Central Valley Proj., Spec. 2732. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

†New Mexico—U. S. Eng., P.O. Box 1538, Albuquerque, Middle Rio Grande, repairing levees and protective works. Serial No. CIVENG-29-005-50-1.

†New York—U. S. Eng., Engineer Park, Buffalo, Zone 7, public overlook shelter Mt. Morris Reservoir Flood Control Proj., Genesee River, Serial No. CIV. ENG-30-023-50-1. CD 12/29/43.

August 18

†Oregon—Bureau Reclamation, Dpt. Interior, Bend, earthwork, concrete structures and erect Arnold Flume between Stations 10 plus 00 and 23 plus 20.8, Arnold (Deschutes) Proj. approx. 6 mi. southwest of Bend. Spec. No. R1-49.

August 23

†Arizona and Nevada—Bureau Reclamation, Dpt. Interior, Davis Dam, Nev., furnishing labor and materials and performing work for installation of electrical and hydraulic machinery and appurtenant equip., and erection of steel structures for Davis Dam, Power Plant and switchyard, Davis Dam Proj. about 30 mi. west of Kingman, Ariz. Spec. 2733. Michael W. Straus, comr. adv ENR 7/28.

August 30

†Arizona-Nevada-California—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnish, and del. f.o.b. cars at shipping point or f.o.b. cars at Boulder City, Nev., hydraulic turbine with pressure regulator for unit A-9 in Hoover Power Plant, Boulder Canyon Proj., Spec. 2737. L. N. McClellan, ch. engr.

†**Arizona-Nevada**—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnish and del. f.o.b. cars at shipping point or f.o.b. cars at Coolidge Mesa, Prescott, Tuscon, Cochise, Eloy and Phoenix, Ariz., main control boards, indoor unit substation for Coolidge substation; telemetering equip., transmitter-receiver sets, distribution transformers, for Coolidge, Prescott, Mesa, E. D. No. 5, Tuscon and Cochise substations and Phoenix dispatching office, Davis Dam Proj. Spec. 2734. L. N. McClellan, ch. engr.

September 1

†**N. Y., Syracuse** — U. S. Eng., Engineer Park, Buffalo Zone 7, planting of slope, Onondaga Dam, Onondaga Creek. Serial No. CIVENG-30-023-50-4.

LOW BIDDERS

†**California**—Bureau Reclamation, Dpt. Interior, Tracy, July 15, completing Tracy Pumping Plant, approx. 9 mi. northwest of Tracy, Spec. 2690, from Stolte Inc. and Duncanson-Harrelson Co., 8451 San Leandro St., Oakland, United Concrete Pipe Corp. and Ralph A. Bell, Box 425, Baldwin Park, **$444,704.** CD 6/8.

●†**Colorado** — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, June 24, earthwork concrete lining tunnel and structures for Horsetooth supply conduit, Station 0 plus 00 to Station 53 plus 88, Horsetooth Feeder Canal, Station 3 plus 70 to Station 67 plus 52 and access road, about 8 mi. west of Loveland, Spec. 2684, from Western Paving & Constr. Co., 523 Washington St., Denver, **$1,383,400.** CD 5/27.

†**Kansas**—U. S. Eng., 601 Davidson Bldg., 10 E. 17 St., Kansas City, Zone 8, Mo., July 14, 7,170 lin. ft. pile dike, revetment, dike and revetment repair rock fill, Missouri River, Doniphan to Kickapoo Bends, approx. 428.5 mi. above mouth and approx. 5.5 mi. downstream from Atchison, Serial No. Eng-23-028-50-3, from W. P. McGeorge, Jr., P.O. Box 995, Pine Bluff, Ark., **$233,318.** Est. $221,944. CD 7/7.

†**Kansas**—U. S. Eng., 601 Davidson Bldg., Kansas City, Zone 8, Mo., July 12, 10,200 lin. ft. pile dike, revetment, revetment repair, rock fill, Missouri River, at Squaw to Burr Oak bends, approx. 490.5 mi. above mouth of river and approx. 14.5 mi. below White Cloud, Serial No. Eng-23-028-49-251, from W. P. McGeorge, Jr., P.O. Box 995, Pine Bluff, Ark., **$258,666.** Est. $230,000. CD 7/5.

†**Louisiana** — U. S. Eng., foot Prytania St., New Orleans, July 12, approx. 870,000 cu. yd. hydraulic earthwork, Morgan City, Serial No. Eng., 16-047-49-350, from Jahncke Service Inc., 814 Howard Ave., **$477,630.**

†**Massachusetts**—U. S. Eng., Army Base, Boston, July 15, shore protective barrier, Cutter Island, Serial No. CIVENG-30-091-50-2, from Whaling City Dredge & Dock Corp., Buell St., Groton, Conn., **$124,800.** CD 7/8.

Minn., St. Paul—City, J. J. McDevitt, purch. agt., July 5, revetment and imprv. Upper Levee, Mississippi River, from 240 ft. southwest of center line Robert St. bridge, to 150 ft. southwest of westerly line of Market St., from W. W. Mayne Co., 1397 Laurel Ave., **$113,752.** G. J. Shepard, city engr.

†**Mississippi** — U. S. Eng., P. O. Box 60, Vicksburg, July 6, upper bank paving, several locations, Mississippi River, between mouth of Old River (Mile 301.5 AHP) and mouth of Arkansas River, (Mile 575 AHP), Serial No. Eng., 22-052-49-227, from Mississippi Valley Engr. & Constr. Co., and The Massman Constr. Co., 736 Alabama St., Memphis, Tenn., **$998,775,** Est. $913,930. CD 6/13.

N. J., Atlantic City—N. J., State Dpt. Conservation and Economic Development, State House Annex, Trenton, and City of Atlantic City, June 27, 5 jetties between St. Charles Pl. and Illinois Ave., from Atlantic County Constr. Co., Virginia and Mediterranean Aves., Atlantic City, **$528,755.** CD 6/21.

●†**Oregon**—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., July 19, initial stage cofferdam for McNary Dam on Oregon Shore, concrete substructure for 2 main units; station service bay and assembly bay for powerhouse; main second step cofferdam; portion of Oregon shore abutment. Eng-45-164-49-111 Umatilla Co. from Guy F. Atkinson Co., 10 W. Strand Ave., South, San Francisco, Calif., Ostrander Constr. Co., Portland and J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C., **$15,825,539.** Est. $12,784,132. CD 6/6.

Wash., Seattle — Port of Seattle, Bell St. Terminal, cancelled bids to have been opened July 12, construct bulkheads and dredging for Salmon Bay fishing terminal. $200,000. Will re-advertise.

CONTRACTS AWARDED

Fla., Miami Beach—Atlantis Hotel, c/o contractor, steel bulkhead and groynes, to J. Y. Gooch Co., Inc., 1208 Congress Bldg., Miami, **$30,000.**

●†**Illinois**—U. S. Eng., 826 U. S. Court House & Custom House, 1114 Market St., St. Louis, Mo., levees, Wood River Drainage and Levee Dist., Item II-A (1) Item II-A (2) and Item II-A (3), Serial No. Eng. 23-065-49-139, to LaCrosse Dredging Corp., 310 S. Michigan Ave., Chicago, **$1,286,610.** Bids 6/24. CD 6/28, under LB.

†**Md., Annapolis** — P. Wks. Dpt., Naval Academy, dike, dredging and fill, to Vanguard Constr. Corp., 369 Lexington Ave., New York 17, N. Y., **$119,200.** Bids 5/10. Awarded 6/6. CD 4/14.

†**N. M., Los Alamos**—U. S. Atomic Energy Comn., Los Alamos, site imprvs. for community center, incl. clearing, sub-grade; paving, drainage, sprinkler irrigation sys., Inv. 291-49-153, Lot 1, to D. W. Falls, Los Alamos, **$47,370;** Lot 2, to Baker Bros. Co., Albuquerque, **$44,613.** Bids 6/6.

†**N. M., Los Alamos**—U. S. Atomic Energy Comn., Los Alamos, central site facilities incl. grading, drainage, levelling, waterlines, Inv. No. 291-49-158, to J. F. Byrd, Elida, **$422,412.** Bids 6/28.

†**New York** — U. S. Eng., Engineer Park, Buffalo, Zone 7, Onondaga Creek Channel imprvs., Syracuse, Onondaga Co., Serial No. Eng-30-23-49-54, to D. W. Winkleman Co., Inc., 205 Harrison St., Syracuse, **$397,285.** Bids 6/21, awarded 6/27. CD 5/24.

†**Wash., Arlington**—P. Wks. Office, 13th Naval Dist., 1611 W. Wheeler St., Seattle, construct Jim Creek diversion channel at Naval Communication Station, Spec. 22730, to Associated Sand and Gravel Co., Everett, **$156,126.** Bids 7/1. CD 6/24.

N. S., Lunenburg—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., breakwater reconstruction to T. C. Gorman, Ltd., 123 Roy Bldg., Halifax. Approx. **$36,496.** R. Blais, c/o owner, engr. Bids 7/13. CD 6/29.

Ont., Hudson — Dominion Govt., Dpt. P. Wks., Ottawa, dredging, to E. Robidoux, Yamaska, **$50,000.** J. E. Bonaventure, Dpt. P. Wks., Station H, Montreal, Que., engr.

AIRPORTS AND AIRBASES

BIDS ASKED

August 3

●**Ont., Ottawa**—HOUSING—A. J. E. Smith, engr. c/o Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, 200 houses, Rockcliffe Airport, Tenders, Rockcliffe (D. N. D. Non-Urban) No. 1/49. Approx. $1,300,000. Plans deposit $10.

August 4

●**Ont., Trenton**—HOUSING—A. J. E. Smith, engrs., c/o Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, 200 houses, at airport, (D. N. D.), Non Urban Proj. 1/49, Approx. $1,600,000. Plans deposit $10.

August 10

†**Ill., Belleville**—HOUSING—U. S. Eng., 520 Merchandise Mart, Chicago, family type quarters (2 story row houses), Scott Air Force Base, Serial No. Eng., 11-032-50-1. CD 7/7, under LB.

August 17

†**O., Dayton** — ROTARY WING TESTING FACILITIES—U. S. Eng., 830 W. Broadway, Louisville, 3, Ky., 122x190 ft. steel, concrete, brick rotary wing testing facilities, Wright Patterson Air Force Base, Serial No. Eng. 15-029-50-3. Plans deposit $15.

†**Okla., Oklahoma**—SPRINKLER SYSTEM—U. S. Eng., P. O. Box 61, Tulsa, Zone 2, installing automatic sprinkler sys., Tinker Air Force Base. Inv. No. Eng-34-066-50-1.

About August 26

†**N. M., Alamogordo**—ROCKET FACILITIES—U. S. Eng., P. O. Box 1538, Albuquerque, construct addtn'l guided flight test facilities Holloman Air Force Base A-92). Serial No. Eng-29-005-50-5. CD 1/7/48 under LB.

LOW BIDDERS

Colo., Gunnison—AIRPORT IMPRVS.—Bd. Comrs. Gunnison Co., July 8, airport imprvs., Schedule 1, incl. hot mix paving, from Peter Kiewit Sons, Co., 1950 S. Colorado Blvd., Denver, **$86,690.** CD 12/13/44.

†**Fla., Tampa**—SYSTEM FACILITIES—U. S. Eng., Post Office Bldg., Savannah, Ga., cancelled bids to have been opened about August 11, construct ground control approach system facilities at MacDill Air Force Base. CD 7/11.

Mass., Fall River—AIRPORT IMPRVS.—City, city aud., City Hall, July 8, airport imprvs., second stage, from Sherry Corp., 823 Davol St., Approx. **$173,000.**

Tex., Houston—ADMINISTRATION BLDG. —City, City Hall, 900 Brazos St., July 13, administration bldg., expans., control tower at Municipal Airport from Manhattan Constr. Co. of Texas, Esperson Bldg., **$113,414.** CD 5/2.

CONTRACTS AWARDED

†**Fla., Tampa**—FAMILY QUARTERS—U. S. Eng., Post Office Bldg., Savannah, Ga., family quarters at Mac Dill Field, to Henry A. Ivey, Inc., 569 Plum St. N. W., Atlanta, Ga., **$529,278.** CD 6/22, under LB.

†**Mass., East Boston (Sta. Boston)** — NATIONAL GUARD FACILITIES—U. S. Eng., Bldg. 21, U. S. Naval Drydock, South Boston, June 24, air national guard facilities, Logan International Airport, Serial No. Eng, 19-016-49-106, to Frankini Constr. Co., 26 Mystic Ave., Medford, **$172,223.** CD 6/24.

†**Mich., Selfridge Field (Br. Mt. Clemens)** —HOUSING—U. S. Eng., 520 Merchandise Mart, Chicago 54, Ill., Item 2, family type quarters (2 story row houses) Selfridge Air Force Base, Serial No. Eng. 11-032-49-101, to Atkin-Fordon Co., 7360 W. Chicago Ave., Detroit, Zone 4, **$419,008.** Bids 6/7, awarded 6/27. CD 6/27, under LB.

†**Pa., Coraopolis**—FACILITIES—U. S. Eng., First and Douglas Sts., N.W. Wash. 25, D. C., facilities for 2 squadrons, paving aircraft parking apron, taxiway and connecting pavement between hangar and parking area Air National Guard at Greater Pittsburgh Airport. Eng-40-080-49-189 (53)M to McGrady Constr. Co., 304 Ross St., Pittsburgh, **$387,013.** Bids 6/23. CD 6/13.

PUBLIC BUILDINGS

BIDS ASKED

August 1

N. Y., New York—BUS TERMINAL—at office Chief Engineer, Port of New York Auth., 111 8th Ave., Zone 11, sub-grade walls for the Port Authority Bus Terminal between W. 40 and W. 41 Sts., and 8 and 9 Aves. Plans deposit $10. CD 2/4/47.

August 2

Ky., Bowling Green—SCHOOL—Warren Co., Bowling Green high school, $400,000. J. M. Ingram, Citizens Bdg., Louisville, archt.

†**N. Y., Garden City**—POST OFFICE—Pub. Bldg. Admin., 731 Custom House, New York, Zone 4, misc. repairs to U. S. Post Office. FWA.

Que., Val d'Or—HOUSING—J. J. O'Sullivan, 1253 McGill College Ave., c/o Central Mortgage & Housing Corp., 70 Lyon St., Ottawa, Ont., 44 houses, semi-detached, $280,000. Plans deposit $10. CD 8/7/46, under Commercial Bldgs.

August 3

Ind., Westville—HOSPITAL—State of Indiana, P. Wks. & Supply Div., Walter Myheck, dir., 404 State House, Indianapolis, brick, steel, rein.-con. central power and emergency plant, Northern Indiana State Hospital, $400,000. Boyd Phelps, 232 Franklin St., Michigan City, engr.

Neb., Tecumseh—POWER PLANT—City, W. J. Devenney, clk., City Hall, power plant imprvs., incl. bldg. alterations, power generating equip., etc. $156,000. Henninsson Eng. Co., Standard Oil Bldg., Omaha, engr.

N. C., Edenton—HOSPITAL—Chowan Hospital, Inc., Edenton, Courthouse, 35 bed hospital. Plans deposit $20 general; $10 mechanical work. Marion A. Ham, Durham, archt. CD 4/6.

Ont., Peterborough — HOUSING — A. J. E. Smith, engrs., c/o Central Mortgage & Housing, Corp., 395 Fleet St., Toronto, 100 houses, Tender Peterborough, 11/49, Approx. $700,000. Plans deposit $10.

August 4

†**Wyoming**—DAMPERS, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Casper, Wyo. dampers, thermostats and thermometers, fans, unit heaters and blast heaters, air filters, grilles and registers and heat-dissipating screen for Kortes Power Plant, Kortes Unit, Missouri River Basin Proj., Spec. 2731. L. N. McClellan, ch. engr.

August 5

La., Baton Rouge—CHEMISTRY—Louisiana State University, Baton Rouge, chemistry bldg., addn., furnishing, installing laboratory equip., etc. Plans deposit $15. A. Hays Town, Masonic Temple Bldg., archt.

August 3

Mass., North Cambridge—HOUSING—City of Cambridge, Housing Auth., 1416 Massachusetts Ave., Cambridge, 66 unit brick veterans housing proj., Walden St., Approx. $666,000. W. L. Galvin, 38 B. Brattle St., Cambridge. CD 7/14.

August 3

O., Akron—SANATORIUM—Comrs. Summit Co. and Edwin Shaw Sanatorium Bd. Trustees, Edwin Shaw Sanatorium, East Akron, Edwin Shaw Sanatorium addns., alterations. Plans deposit $15. Wagner & Luxmore, 200 Permanent Bldg., Akron, archts.

●**Ont., Rockcliffe (Postal Dist. Ottawa)** — HOUSING—A. J. E. Smith, engr., 395 Fleet St. W., Toronto, 200 dwellings for Central Mortgage & Housing Corp., 70 Lyon St., Ottawa, $1,400,000. Plans deposit $10.

August 4

†**Nebraska**—RESIDENCE—Bureau Reclamation, Dpt. Interior, Imperial, residence, fdn. for future garage, water sys., gas sys. and sewage disposal sys. for caretaker's residence and maintenance facilities at Enders Dam, Missouri River Basin Proj., Spec. RS-73. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

August 4

Tenn., Martin—LABORATORY—University of Tennessee, c/o Hart & Mc Bryde, archts., States Bldg., Nashville, joint laboratory and library at Martin Branch, University of Tennessee. $600,000. CD 4/14/48.

Tex., Houston—SCHOOL—H. L. Mills, bus. mgr., 1600 Washington Ave., school, Braes Heights Addn. Claude E. Hooton & Harry A. Turner, 2502 Robinhood St., archts. CD 1/5.

August 5

Ind., Bedford — HOSPITAL — Bd. County Comrs., Bd. Hospital Trustees, Court House, 2 story, bsmnt., T-shaped, brick, stone, rein.-

con. steel Dunn Memorial Hospital addn., $450,000. Plans deposit $25., Walter Scholer & Assoc., 1114 State St., Lafayette, archts. CD 10/21.

August 5

Ind., Indianapolis — RESEARCH LABORATORY—Indiana University, Bd. Trustees. J. A. Franklin, V. P. Bloomington, 3 story, 45x109 and 25x27 ft. research laboratory, $350,000, Robert Frost Daggett, 350 E. Fall Creek Blvd., archt. CD 7/15.

Mass., Swampscott — HOUSING — Town of Swampscott Housing Auth., J. A. Hegarty, chn., Swampscott, 4 family 2 story bsmnt., frame apartments, incl. 36 units, veterans housing proj., $390,000. Plans deposit $100., Donald C. Goss, 131 State St., Boston, archt., C. T. Rhoades, 53 State St., Boston, engr. CD 6/21.

August 8

Mo., Kirkwood (St. Louis, Zone 22, P. O.)—SCHOOL—Kirkwood School Dist., Bd. Educ., F. W. Hendricks, supt., 702 S. Kirkwood Rd., 2 story, bsmnt., brick, concrete Oakland School, Sappington Rd. and Lockwood Ave. Bids 7/21 rejected, L. B. **$269,500.** Bonsask & Pearce, Inc., 308 N. 6 St., St. Louis, Zone 1, Mo., archt., CD 7/1, under LB.

N. Y., New York—VENTILATION BLDG.—at office Chief Engr., Port of New York Auth., 111 8 Ave., Zone 11, foundation for ventilation bldg. for the W. 179 St. Tunnel. Contr. CQB-9. Plans deposit $25.

August 9

Calif., Eldridge — BOILER PLANT — State Div. Architecture, P. Wks. Bldg., Sanramento, replacement boiler plant at Sonoma State Home. Plans deposit $25. Anson Boyd, state archt.

B. C., Salmon Arm—SCHOOL—R. W. Sladen, secy.-treas. School Dist. 20, Salmon Arm, 2 story, stucco, frame school and 2 story frame school addn. Approx. **$250,000.** Plans deposit $25. E. Evans & Sons, Wm. Bow, 119 W. Pender St., Vancouver, archts.

About August 8

†W. Va., Beckley—QUARTERS—U. S. Eng., Madison Ave. and 8 St. W., Huntington, Zone 18, quarters bldgs. at Veterans Admin. Hospital for Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash. 25, D. C.

August 9

†Mich., Ann Arbor—Veterans Admin., Munitions Bldg., Vermont Ave., between H and I Sts. N. W., Wash. 25, D. C., Hospital Bldg. 1, Apartment Bldg. 3, Nurses Quarters Bldg. 4, Attendants Quarters Bldg. 5, Station Garage Bldg. 6, Boiler House Bldg. 8, Radial Brick Chimney 9, Incinerator Bldg. 12, Water Pumping Station 15, Underground Soft Water Reservoir 17, Underground Wet Salt Storage Basins 18, Underground Hard Water Reservoir 19, Spec. 4920. CD 12/19/45.

Minn., Windom — TURBINE GENERATOR UNIT—City, M. C. Lanslee, clk., City Hall, furnishing, installing municipal power plant, 2,000 kw turbine generator unit, condenser and water pump and auxiliary equip. $150,000. Plans deposit $35. Pfeifer & Schultz, 702 Wesley Temple Bldg., Minneapolis, engrs. CD 12/7, under LB.

†N. D., Minot—NURSES' QUARTERS—U. S. Eng., Fort Peck, Mont., nurses' quarters bldg. for the John Moses Veterans Memorial Hospital, Serial No. Eng-24-016-49-86. CD 6/28.

Tenn., Bolivar — SCHOOL — Office of C. C. Wheeler, purch agt. Hardeman Co. Court House, Bolivar. Central High School. Plans deposit $50. Eisom, Anthony, McKenny & Cox, Inc., 711 Sterick Bldg., Memphis, archt. CD 9/12/46.

Ont., Dryden—HIGH SCHOOL—G. H. Wice, secy., c/o High School Bd., Dryden, 2 story, 68x164 ft. steel, brick rein.-con. high school. Approx. $275,000. Plans deposit $25. F. W. Warren, 7 Hughson St. S., Hamilton, archt.

About August 10

Kan., Liberal—Bd. Educ., R. B. Mahmon, secy., high school addn., incl. auditorium, gymnasium, $350,000; high school addn., $509,000. CD 4/20—ENR 5/12.

Colo., Pueblo—TECHNICAL BLDG.—Pueblo County Junior College, Pueblo, 1 story 56x394 ft. brick vocational technical bldg., with two 60x255 ft. each wings, separate bldg. between wings 60x178 ft., $400,000. Walter De Mordaunt, 738 Thatcher Bldg., archt. and engr. CD 4/26.

●Mass., Belmont—HOUSING—Town of Belmont Housing Auth., C. Weber, chn., 86 Stone Rd., 100 unit veterans housing proj., $1,625,237. Plans deposit $50. Edward J. Shields, 1245 Hancock St., Quincy, archts., Hubbard, Lawless & Hakeley, 177 State St., Boston, engrs. CD 1/10.

Mass., Hyannis—SCHOOL—Town of Barnstable Chn. School Comrs., F. L. Hull, Barnstable, elementary school, Bearses Way, $750,000. Plans deposit $50., McLaughlin & Burr, 131 State St., Boston, archts. CD 9/28.

August 10

Mo., Columbia—CHEMISTRY LABORATORY—Dpt. Construction, Room 201, Maintenance Bldg., University of Missouri, brick, concrete chemistry laboratory, $250,000. Jamieson & Spearl, 1696 Arcade Bldg., 812 Olive St., St. Louis, Zone 1, Mo. archts. CD 4/18/47.

About August 15

Ala., Ozark—HOSPITAL—Dale County Hospital Assn., Ozark, hospital, $300,000. H. L. Holman, Jr., Ozark, archt.

Ala., Wenonah — SCHOOL — Alabama State Bd. Educ., Montgomery, trade school, $600,000. Wilmot C. Douglas, 226 N. 14 St., Birmingham, archt.

N. C., Warrenton—HOSPITAL—Warren Co. Hospital, Warrenton, 35 bed hospital. Approx. $250,000. Plans deposit $25 general, $15 mechanical. John J. Rowland, Kinston, engr. CD 3/28.

N. M., Jal—HIGH SCHOOL—Lea Co. Bd. Educ., Lovington, 2 story, 23,000 sq. ft. high school. Approx. $250,000. C. C. Holderness, P. O. Box 293, Carlsbad, engr. and archt.

O., Youngstown—SCHOOL—Bd. Educ., c/o M. I. Butler, clk., 20 W. Wood St., 20 room elementary school S. W. corner Elm and Grant Sts. $600,000. Plans deposit $15. Arsene Rousseau & Paul Boucherle, 213 Mahoning Bank Bldg., archts. CD 5/15/47.

August 11

Calif., Fresno—SCHOOL—Fresno Bd. Educ., 2348 Mariposa St., Yosemite Junior High School bldg., $375,000. Plans deposit $25. David Horn & Marshal Mortland, 1244 "O" St., archts. CD 1/22/47.

Ill., Chicago—HOUSING—Chicago Housing Auth., 343 S. Dearborn St., 136 dwelling units, multiple story apartment brick, rein.-con. social science bldg., Washington Ave. and Church St., $768,000. Plans deposit $15. Magney, Tusler & Setter, 202 Foshay Tower, archts. CD 10/29/47.

About August 12

†Ala., Birmingham—U. S. Eng., P. O. Box 1169, Mobile, Zone 7, 500-bed veterans administration hospital for Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash, 25, D. C. CD 4/16/48—ENR 4/22/48.

August 12

Minn., Minneapolis—SCHOOL—Bd. Educ., 807 N. E. Broadway, 1 story, Waite Park grade school, $250,000. Plans deposit $25. Magney, Tulser & Setter, 202 Foshay Tower, archts. CD 11/24.

●Ont., Toronto—HOUSING—H. E. McCallum, mayor, chn., c/o Housing Auth. of Toronto, City Hall, 3 story, bsmnt., 131x239 ft., brick, steel H-shaped bldgs., Regent Park Housing. Approx. $1,250,000. Jos. E. Hoare, Jr., 481 Eglinton Ave. W., archt.

About August 15

●Ill., Maplewood (East St. Louis, Ill., P. O.)—HIGH SCHOOL—School Dist. 187, St. Clair Co., Harold Anglim, secy., Maplewood (East St. Louis, Ill.) 2 story, bsmnt., brick rein.-con. high school. **$1,750,000.** Charles B. Spencer, Chemical Bldg., 720 Oliver St., St. Louis, Zone 1, Mo., archt.

N. J., Burlington—SCHOOL—Burlington Bd. Educ., Burlington, Captain James Lawrence School addns. and alterations, $770,000. Micklewright & Mountford, 72 Ewing St., Trenton, archts. CD 11/26/48.

August 15

Ia., Nevada — HOSPITAL — Story County, Court House, brick, concrete, steel hospital, $300,000. Wetherall & Harrison, 506 Shops Bldg., Des Moines, archts. CD 5/19.

Mo., Columbia — SCHOOL — Bd. Educ., Columbia School Dist. Neil E. Aslin, supt. Schools, Columbia, brick, rein.-con. steel, stone school, West Blvd., northwestern part of city. Approx. $250,000. Marshall & Brown, 114 W. 10 St., Kansas City, Mo. archts. CD 5/13.

Ont., Kenora—HIGH SCHOOL—Shore & Moffat, archts., 79 Queen St. E., Toronto, high school alterations and addns., for Kenora-Keewatin Dist. High School Bd., B. Thomas, secy. Approx. $250,000. Plans deposit $25. CD 12/6.

●Alaska, Fairbanks—SCHOOL—School Bd., Fairbanks, high school, $2,500,000. Extended date. CD 7/12.

About August 16

†W. Va., Clarksburg—QUARTERS—U. S. Eng., Madison Ave. and 8 St. W., Huntington, Zone 18, quarters bldgs., appurtenances at Veterans Admin. Hospital, for Veterans Admin., Vermont Ave. between H and I Sts, N. W. Wash. 25, D. C.

August 16

†Arizona-California-Nevada — GENERATOR —Bureau Reclamation, Dept. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., generator for Unit A-9 at Hoover Power Plant, Boulder Canyon Proj., Spec. 2735. L. N. McClellan, ch. engr.

Calif., Alturas and Cedarville—HOSPITALS Modoc Co., Courthouse Alturas, 25 bed hospital, Alturas Hospital and 8 bed Cedarville Hospital, over $250,000. Plans deposit $100. Douglas D. Stone and Lou Mulloy, 619 California St., San Francisco, archts. CD 5/8/46.

Calif., Camarillo — CUSTODIAL GROUP — State Div. Architecture, P. Wks. Bldg., Sacramento, 2 story, rein.-con. female custodial group, Unit F-20, Camarillo State Hospital (1) general work; (2) heating and ventilating; (3) plumbing; (4) electric work. Plans deposit $25. Anson Boyd, state archt. CD 3/5/45.

August 16

Calif., San Andreas — DORMITORY, etc. — State Div. Architecture, P. Wks. Bldg., Sacramento, dormitory and completing kitchen, dining room, commissary bldg., etc. at Fricot Ranch School for Boys (1) general work; (2) ventilating; (3) plumbing; (3) heating and ventilating; (4) electric work. Plans deposit $25. Anson Boyd, state archt.

Ga., Atlanta—SCHOOL—Fulton County Bd. Educ., Courthouse, 2 story, 16 classroom Roswell School addn. Plans deposit $25. Aeck & Assoc., 14 Peachtree St., Atlanta, archts.

Mass., Lynnfield—ELEMENTARY SCHOOL —Town of Lynnfield, Oscar Bray, chn. bldg. dom., Lynnfield, 1 story, masonry elementary school, Precinct 21. Approx. $350,000. Plans deposit $25., Howard L. Rich, and Herman F. Tucker, 45 Newbury St., Boston, archts. CD 5/26.

Neb., Wahoo — HOSPITAL — Saunders Co., Wahoo, hospital, $300,000. John Latenser & Sons, 1307 Farnam St., Omaha, archts.

O., Columbus—COUNTY HOME IMPRVS.—Franklin Co. Comrs., Courthouse, Part I, North Wing (Alt. 1, kitchen wing, Alt. 2, South Solarium); Part II, West Wing (Alt. 1, kitchen wing, Alt. 2, south solarium); Part III, elevator, Part IV, boiler room work at Franklin County Home, Alum Creek Dr. Sims, Cornelius & Schooley, 2901 N. High St., archts. CD 7/9/47.

Tex., Kingsville—STUDENT UNION—College of Arts & Industries, E. N. Jones, pres., Kingsville, 1 and 3 story, brick, reinforced concrete union bldg., $400,000. Eggers & Higgins, 542 5 Ave., New York, N. Y., and Phelps & DeWees & Simmons, 1501 Major Bldg., San Antonio, archts. Frank T. Drought, 117 W. Pecan St., San Antonio, mech. engr. CD 6/25/45.

August 17

N. Y., Hempstead—HOUSING PROJECT—Hempstead Housing Auth., 335 Greenwich St., housing proj. $600,000. Fellheimer & Wagner, 155 E. 42 St., New York, Zone 17, archts. CD 10/2/47.

N. C., Morgantown—HOSPITAL POWER PLANT—at office A. P. Smith, Bus. Mgr., State Hospital, Morgantown, construct steam generating equip., feedwater heater, boiler feed pumps, electric generating equip. and electrical switchboard at State Hospital. Wiley & Wilson, American Bldg., Richmond, engrs. CD 4/27/44.

August 18

La., Bogalusa — HOSPITAL — State Div. Admin., Baton Rougse, Washington St. Tammany Charity Hospital. Plans deposit $50. Smith & Padgett, Monroe, archts. CD 6/24, under LB.

August 23

†Md., Bethesda—P. Bldgs. Admin., F St. between 18 and 19 Sts. N. W., Wash. 25, D. C., superstructure (except laboratories) Clinical Center (Bldg. 10) Nat onal Institute of Health, Proj. 18-063. F. W. A.

†N. M., Las Cruces—MACHINE SHOP— U. S. Eng., P. O. Box 1538, Albuquerque, machine shop, White Sands Proving Grounds, Serial No. Eng-29-115-50-3. CD 7/13.

N. Y., Long Island City—HOUSE FDNS., etc. —New York City Housing Auth., 63 Park Row, New York, Zone 7, foundations, appurtenances for Sect. II of Ravenswood Houses, Proj. NYC-20, incl. comfort station and bldgs. numbered 18 to 31 inclusive located in area bounded by 34 Ave., 21 St. and 36 Ave. and 12 St. Extended date. CD 7/13.

August 25

Calif., San Andreas — HOSPITAL — Mark Twain Hospital Dist., Courthouse, San Andreas, 1 story, 66-bed frame hospital, $625,000. Plans deposit $100. Robert Stanton, Carmel, archt. Mac. D. Perkins, 110 Sutter St., San Francisco, engr. CD 6/18/48.

N. Y., Chappaqua—SCHOOL—School Dist. 4, Town of New Castle and Mount Pleasant, Horace Greeley School, Chappaqua, school. Moore & Hutchins, 125 E. 37 St., New York, Zone 16, archts. CD 7/9/47.

August 30

†Ill., Chicago—VETERANS ADMINISTRATION HOSPITAL—Veterans Admin., Vermont Ave., between H and I Sts. N.W., Wash. 25, D. C., Hospital Bldg. 7, Recreation and Chapel Bldg. 11, Apartment Bldg. 3, Nurses Quarters Bldg. 4, Attendant Quarters Bldg. 5, Boiler House Bldg. 8, Radial Brick Chimney 9, etc., Spec. 4920 A, Proj. No. 4-4126. CD 11/29/46.

●N. Y., East Meadow — HOSPITAL — Bd. Suprvrs., Nassau Co., 2nd County Court House, Mineola, hospital alterations, addn. $7,000,000. Eggers & Higgins, 542 Fifth Ave., New York, Zone 18, archts. CD 5/4, under LB.

†N. M., Las Cruces—MISSILE ASSEMBLY —U. S. Eng., P. O. Box 1538, Albuquerque, missile assembly bldg., White Sands Proving Ground, Serial No. Eng-29-005-50-04. CD 7/13. under LB.

Okla., Norman—STUDENT UNION—Oklahoma Student Union, Norman, student union bldg. addn. and alterations at University of Oklahoma. $500,000. Plans deposit $100

Sorey, Hill & Sorey, 809 N. W. 36 St., Oklahoma City, archts. CD 9/28.

About September 1

●**Mich., Coldwater**—State of Michigan, State Bldg., Lansing, Zone 13, 2 nursery units, girls detention bldg., boys detention bldg., farm colony dormitory, 2 physicians home, power plant boiler and kitchen equip., State Home and Training School. $1,736,000.

September 2

●**N. C., Chapel Hill**—HOSPITAL—University of North Carolina, Chapel Hill, hospital alterations and addns. to Medical School incl. nurses home. Approx. $6,000,000. Plans deposit $50. Northrup & O'Brien, Reynolds Office Bldg., Winston-Salem, archts.

On or About September 20

†**Md., Baltimore**—HOSPITAL—U. S. Eng., P. O. Box 1715, 24 St. and Maryland Ave., Zone 3, veterans admin. hospital, quarters, service Bldgs., utilities. Serial No. Eng. 18-020-49-57. CD 4/22.

After November 6

Ill., Harrisburg — Harrisburg Twp. School Dist., R. L. Foster, principal, Harrisburg, 160x180 ft., concrete, brick, steel gymnasium and vocational bldg., $485,000. Ralph D. Brown, Harrisburg, archt. CD 2/25—ENR 3/17.

LOW BIDDERS

Ala., Tuscaloosa—ENGINEERING—University of Alabama, Tuscaloosa, July 12, engineering bldg., from J. F. Holley, 505 6 Ave. N., Birmingham, **$299,937.** CD 6/30.

●**Calif., Patton** — TUBERCULOSIS UNIT — State Div. Architecture, P. Wks. Bldg., Sacramento, July 12, general contract 2 story part basmt., rein.-con., 138,000 sq. ft. tuberculosis unit, 1 story, 6,500 sq. ft. rein.-con. ward bldg. at Patton State Hospital, from James I. Barnes Constr. Co., 1119 Montana Ave., Santa Monica, **$1,230,610.** CD 6/13.

Conn., Berlin—SCHOOL—Town Bd. Selectmen, Town Hall, rejected bids June 3, brick, steel, concrete high school Patterson Rd., L.B. **$924,000.** CD 6/14, under L.B.

●**Ill., Chicago**—HOUSING—Chicago Housing Auth., 343 S. Dearborn St., Chicago, July 12, relocation housing Site 2, fifty-five 2 story, brick bldgs., incl. 316 units, 44 and Cicero Sts., from W. E. O'Neil Constr. Co., 2751 N. Clybourn St., **$2,633,000.** CD 6/17.

Kan., Arkansas City — HOSPITAL — City, James Clough, clk., City Hall, cancelled bids to have been opened July 11, brick, concrete hospital and hospital alterations, **$650,000.** Will re-advertise. Wm. T. Schmidt, 1634 N. W. 10 St., Oklahoma City, Okla., archt. CD 6/8.

Kan., Manhattan—RESIDENT HALL—State of Kansas, Topeka, July 12, womens resident hall, Kansas State College, from Huff Bros., Fort Scott, **$565,513.** CD 6/22.

La., Baton Rouge—East Baton Rouge Parish School, Bd., Baton Rouge, rejected bids July 6, Third Ward School, **$331,000.** CD 7/13, under LB.

●**Mass., Arlington** — HOUSING — Town of Arlington Housing Auth., W. D. Barker, chn., Arlington, July 8, veterans housing proj., Freemont and Gardner Sts., from G. L. Rugo & Sons, Inc., 80 Boylston St., Boston, **$1,241,-717.** CD 6/28.

Mass., Norfolk—NURSES HOME—Commonwealth of Massachusetts, Dpt. P Health, State House, Boston, July 14, nurses home, P. H9, Contr. 1, Pondville State Hospital, from M. Spinelli & Sons Co. Inc., 79 Milk St., Boston, **$413,000.** CD 6/27.

Miss., Hattiesburg — SCHOOL — City, City Hall, July 12, junior high school from Dye & Mullens, Inc., P.O. Box 485, Columbia, **$433,-842.** CD 6/20.

†**Montana**—SUBSTATION—Bureau Reclamation, Dpt. Interior, Fort Peck, July 12, Williston Substation, approx. 4.5 mi. west of Williston, Fort Peck Proj., Spec. 2703, from Kilforan Electric Co., Appleton, Wis., **$168,448.** CD 6/14.

N. H., Walpole—SCHOOL—Town, School Bd., A. L. Hubbard, chn., Hubbard Farms Office, July 7, consolidated school from Leon Keyser Co., 48 Hanover St., Manchester, **$265,574.** CD 6/15.

●**N. J., Salem** — HOSPITAL — Salem County Memorial Hospital, 87 Market St., rejected bids June 30, hospital, L.B. **$1,067,000.** Will re-advertise. CD 7/19, under LB.

†**N. M., Los Alamos** — BUILDINGS, etc. — U. S. Atomic Energy Comn., Los Alamos, June 30, buildings, related services. Area TA-37, Inv. No. 291-49-172, from Haddock-Engineers, Ltd. & Assoc., Santa Fe, **$515,467.** CD 6/21.

†**N. M., Los Alamos** — BUILDINGS, etc. — U. S. Atomic Energy Comn., Los Alamos, June 30, 8 buildings, related services Area TA-25, TA-17, Inv. No. 291-49-164, from Shaw & Estes 1407 S. Akard St., Dallas, Tex., **$297,524.** CD 7/5.

†**N. M., Las Cruces**—BARRACKS—U. S. Eng., P. O. Box 1538, Albuquerque, July 1, enlisted mens barracks, at White Sands Proving Grounds, from Robert E. McKee, P. O. Box 562, El Paso, Tex., Lot 1, **$204,300;** Lot 3, **$210,286.** CD 6/27.

N. M., Portales—HOSPITAL—Roosevelt Co., Hospital Bd., Portales, June 28, county hospital from C. S. Lambie & Co., Amarillo, Tex., **$335,093.** Schaefer & Merrell, 111 E. 14 St., Clovis, archts. CD 11/26/48.

●**N. Y., Bayside** — SCHOOL — Supt. School Buildings, Design & Construction, 49 Flatbush Ave., extn., Brooklyn, Zone 1, general contract P. S. 46, 67 Ave. from 218 to 219 Sts., from John T. Brady & Co., 606 W. 47 St., New York, Zone 19, **$1,000,017.** CD 6/29.

●**N. Y., Long Island City**—SCHOOL—Supt. School Bldgs., Design & Constr., 49 Flatbush Ave. exten., Brooklyn, Zone 1, July 18, general contract P. S. 171 29 Ave., 30, 14 and 21 Sts. from Depot Constr. Co., 450 7 Ave., New York, Zone 1, **$1,546,000.** CD 6/29.

N. C., Burlington—HOSPITAL—Bd. Trustees Alamance Co., Burlington, July 12, 100 bed hospital, from Southern States Constr. Co., 1211½ Washington St., Columbia, S. C., **$559,844.** CD 7/7.

N. D., Grand Forks—STUDENT UNION—State Bd. Higher Educ., Bismarck, July 7, student union bldg. from Fred R. Comb Co., 2113 Chicago Ave., Minneapolis, Minn., **$389,907.** Est. $500,000. CD 6/14.

†**Ore., Ordnance**—DISASSEMBLY PLANT—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., rejected bids July 14, ammunition disassembly plant at Umatilla depot, L. B. **$63,128.**

Ore., Dallas—SCHOOL, etc.—Dallas School Dist., Dallas, 8 room, 146x208 ft. frame school and gymnasium, from Barham Bros., 865 N. Winter St., Salem, **$253,990.** Jacobberger, Stanton & Zeller, McKay Bldg., Portland, archts.

Tenn., Maynardville — SCHOOL — Union Co. Bd. Educ., Maynardville, July 12, Horace Maynard High School, from George W. Reagan, 510 Grainger Ave., Knoxville, **$304,950.** CD 6/29.

Tex., Austin—POWER PLANT—City, City Hall, July 12, rein.-con. fdn. and basmt., for electric power plant from E. B. Snead, Balcones Trail, Prop. 1, **$86,900** and Prop 3, **$96,200.** Burns & McDonnell Engr. Co., 95 and Troost Sts., Kansas City, Mo., engrs.

Va., Hanover — DORMITORY, HEATING PLANT—State of Virginia, Richmond, July 14, 2 dormitories and central heating plant at Peaks Industrial School from Thorington Constr. Co., Exchange Bldg., Richmond, **$311,982.** CD 6/15.

†**Washington**—HOUSING—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, cancelled bids to have been opened July 29, temporary housing at Chief Joseph Dam. Serial No. CIVENG-45-108-50-1; CD 7/15.

Wis., New Richmond — POWER HOUSE, etc.—St. Croix Co., New Richmond, July 8, general contract power house and tunnel at County Hospital, from Fred O. Watson, 450 Baker Bldg., Minneapolis, Minn., **$78,000.** CD 1/26.

CONTRACTS AWARDED

Ark., Fayetteville—FINE ARTS BLDG.—University of Arkansas, Fayetteville, general contract brick, rein.-con. fine arts bldg., to Harmon Constr. Co., P.O. Box 1414, Oklahoma City, Okla., **$656,000.** Bids 3/29. CD 4/12, under LB.

Calif., Berkeley—BEVATRON BLDG.—Bd. Regents, University of California, Berkeley, Bevatron bldg., to Pacific Constr. Builders, 2530 18 St., San Francisco, **$792,635.** Bids 6/28. CD 7/6, under LB.

Conn., Milford—HOUSES—Milford Housing Auth., Milford, 17 duplex houses, Proj. MR-20 to Adam Coppola, Derby, **$330,000.** Bids 6/30. CD 6/14.

Conn., New Canaan — SCHOOL — Town, Albert P. Mather, supt. Schools, New Canaan, 14 room, brick, steel elementary school, South Ave. and Old Sanford Rd., to F. D. Rich Co., Inc., 322 Main St., Stamford, **$539,040.** Bids 5/18. CD 6/14, under LB.

●**D. C., Wash.**—PEDIATRIC—Distr. Comrs., District Bldg., pediatric addn. and crippled childrens bldg., Gallinger Hospital, to Joseph F. Nebel Co., 2142 P St. N.W., **$1,512,400.** Bids 7/7, awarded 7/15. CD 7/11, under LB.

●**Ill., Chicago**—HOUSING—Chicago Housing Auth., 343 S. Dearborn St., 132 unit housing proj., incl. two 7 story, brick bldgs., Site 6, Maplewood and Van Buren Sts., to S. N. Nielsen Co., 3059 W. Augusta St., **$1,029,000.** Bids 7/8. CD 7/12, under LB.

Md., Baltimore—HOUSING—Housing Auth. of Baltimore, 709 E. Eager St., alterations and addns., Gilmore Homes, Perkins Homes, O'Donnell Heights and Somerset Projs. Bids 3 and 4, to Charles R. Scrivener Co., 339 St. Paul Pl., **$264,619.** CD 6/9, under LB.

●**Mass., Arlington**—HOUSING—Town of Arlington, Housing Auth., W. D. Barker, chn., Arlington veterans housing proj., Freemont and Gardner Sts., to G. L. Rugo & Sons, Inc., 80 Boylston St., Boston, **$1,240,474.** Bids 7/8. Awarded 7/15. CD 7/19, under LB.

Mass., Lynn — HOUSING — City of Lynn Housing Auth., J. Cavanaugh, chn., 58 Andrews St., Lynn, veterans housing proj., 200-1, Chestnut St. and Memorial Park Ave., to A. Cefalo & Sons, 42 Bennett St., **$856,000.** Bids 6/24. Awarded 7/7. CD 6/29, under LB.

Mass., New Bedford—HOUSING—City of New Bedford, Housing Auth., New Bedford, housing proj., 200-1, Rockdale Ave., Parker St. and Hathaway Blvd., to Sullivan-Foster Inc., 43 Williams St., **$840,480.** Bids 6/30. Awarded 7/7. CD 7/12, under LB.

†**N. M., Los Alamos**—BUILDINGS, etc.—U. S. Atomic Energy Comn., Los Alamos, buildings and related services, in area TA-37, Inv. No. 291-49-172 to Haddock-Engineers, Ltd. & Assoc., Santa Fe, **$515,467.** Bids 6/30. CD 7/18, under LB.

N. Y., Brooklyn—CONTROL—Bd. Transportation, 250 Hudson St., New York, Zone 13, constr. control bldg. and passageway at Kings Hy Station of Brighton Line Contr. TY., to Amdor Structures Inc., 521 Fifth Ave., New York, Zone 17, **$220,654.** Bids 7/1.

O., Cincinnati — SCHOOL — Bd. Educ., 1216 E. 9 St., Roselawn Elementary School to H. W. Miller Constr. Co. Inc., 1511 Neave St., Covington, Ky., **$592,336.** Bids 7/12. CD 6/27.

Okla., Oklahoma City—LIBRARY—Oklahoma City University, 24 and Blackwelder St., Zone 6, Memorial Library and religious bldg. to Lippert Bros. Co., 2800 N. Santa Fe Ave., Zone 5, **$555,865.** Est. $750,000. Bids 6/2. CD 6/28, under LB.

Ore., Portland—SCHOOL—School Dist. No. 1, 631 N. E. Clackamas St., Glenhaven elementary school to E. E. Setergren, Henry Bldg., **$441,962.** Est. $500,000. Bids 7/14. CD 6/16.

Pa., Ardmore — SCHOOL — Lower Merion Twp. School Dist., Ardmore, elementary school to Mc Clain Constr. Co., 1506 Summer St., Phila., **$257,900.** George Wharton Pepper Jr., Lewis Tower Bldg., Phila., archt. Bids 6/18.

Pa., Phila.—SCHOOL—Bd. Educ., 21 and Winter Sts., elementary school 57 St. and Wynnefield Ave., to Mc Closkey & Co., 1620 W. Thompson St., **$625,000.** CD 12/22, under LB.

R. I., Warwick — HOSPITAL — Kent Co. Hospital, A. P. Rueral, chn., Bd. Trustees, mayor, Warwick, hospital, Toll Gate Rd. to E. Turgeon Constr. Co. Inc., 614 Turks Head Bldg., Providence, **$741,637.** Bids 6/9. CD 6/15, under LB.

Tenn., Nashville—SCHOOL—Bd. Educ., W. A. Bass supt., 700 Broadway, Hattie R. Cotton school to George E. Reese, Charlotte Park, **$328,000.** Bids 6/29. CD 6/16.

Tex., Houston — HIGH SCHOOL — Houston Independent School Dist., 1600 Washington St., Stephen F. Austin High School, to James B. Dent, 3503 Montrose St., **$503,000.** CD 2/2/48.

Tex., Sugarland — INDUSTRIAL SHOP — Texas Prison Board, State of Texas, Austin, industrial shop unit for Central No. 2 farm, force-account, **$75,000.** George L. Dahl, 1920½ Main St., Dallas, consult. engr.

Tex., Tyler — HOSPITAL — Smith Co. Ned Price, judge, Courthouse, county hospital to Campbell & Kay, P. O. Box 836, **$852,265.** Est. $1,000,000-$1,500,000. Bids 6/7. CD 6/14, under LB.

Wyo., Laramie — HOSPITAL — Albany Co., Laramie, Ivinson Hospital addn. to Spiegelberg Constr. Co., Laramie, **$294,929.** Est. $350,000. Bids 6/29. CD 6/14.

Ont., Chalk River—LABORATORY—National Research Council Sussex St., Ottawa, Laboratory to Hill Clark Francis Ltd., Whitwood Ave., New Liskeard. Approx. **$200,000.** Bids 6/21. CD 5/25.

Que., Louisville—COLLEGE—School Comn., Louisville, W. Lambert, secy., 5 story, basmt., 62x116 ft. rein.-con. brick college addn., St. Louis de Gonzague, to Real Bourassa, Louisville. Approx. **$300,000.** J. L. Caron, 302 Bonaventure St., Three Rivers, archt.

COMMERCIAL BUILDINGS

BIDS ASKED

About August 1

Ala., Birmingham — CHURCH — Dawson Memorial Baptist Church, c/o George P. Turner, archt., American Life Bldg., Atlanta, Ga., 3 story 78 x 161 ft. church.

August 1

Ala., Huntsville — APARTMENTS — College Hills, Inc., c/o G. W. Jones & Son, Huntsville, soon lets contract, 50 apartments. Charles R. Smilye, Selma, archt.

August 4

Ont., Toronto — HIGH SCHOOL — J. H. Haffa, archt., 96 Bloor St. W., 55x85 ft. steel, concrete, bricks, high school extensions, incl. gymnasium, chapel, auditorium, library, etc., De LaSalle Oaklands high school, Avenue Rd. and Farnham Ave., for Roman Catholic Episcopal Corp., of Toronto, 208 Church St., Approx. $800,000. CD 3/10/48.

August 8

Ill., Chicago—Y. M. C. A. BLDG.—Young Mens Christian Assn., 19 S. LaSalle St., 5 story, brick, steel, stone Y.M.C.A. Bldg., Indiana Ave. and 50 St., first unit, Philip D. West, 185 N. Wabash St., archt. CD 5/17.

August 9

Ga., Decatur—CHURCH, etc.—First Christian Church, c/o Poundstone, Ayers & Godwin, Palmer Bldg., Atlanta, 2 and 3 story church and sunday school. Plans deposit $25.

August 14

●**Mont., Great Falls**—HOUSING—East Base Housing Corp., Great Falls, twenty four 8 family apartments. **$1,000,000.** CD 4/1.

August 16

N. D., Minot—BUILDING—Young Mens Christian Assn., Monot, YMCA bldg. $450,000. Extended date. G. Bugenhagen, Minot, archt. CD 5/25.

Bids Asked

Ill., Brookfield—OFFICE—United Automobile Workers of America, 2 story, 70x200 ft. concrete, steel, brick office and recreation bldg., $300,000. Raymond Levee & Assoc., Appleton, Wis., archts.

Ill., Chicago—SCHOOL and CONVENT—St. Mary Star of Sea Parish, c/o Thomas Edward Cooke, archt., 228 N. La Salle St., 2 story brick, steel, concrete school and convent.

O., Cuyahoga Falls—THEATER—M. B. Horwitz, pres. Washington Theater Circuit, c/o Fails Theater Front St., 85x300 ft. theater, State Rd. between Chamberlain and Maitland Aves., $250,000.

Pa., Phila.—CHURCH, RECTORY—Good Shepherd R. D. Church, 67 St. and Chester Ave., church and rectory. Approx. $250,000. Peter F. Getz, 1634 N. 6 St., archt. CD 6/22.

Wis., Milwaukee—APARTMENT BLDG.—Martinique Realty Co., c/o E. J. Hinton, archt., 1721 N. Water St., Zone 2, 103 eight story, basmt., 70x144 ft. rein.-con., brick, stone apartment. Plans deposit $25.

SOON LETS CONTRACT

Ala., Montgomery—HOSPITAL, etc.—Jackson Hospital & Clinic, Inc., c/o Raymond Sizemore, archt., 16 S. Hull St., Montgomery, soon lets contract hospital—clinic. Extended date. CD 7/13.

Ill., Hinsdale — CHURCH — Union Church of Hinsdale, Hinsdale, soon lets contract 2 story brick, concrete, stone, steel parish hall and 2 chapels, $300,000. Benjamin Franklin Olson, 19 S. LaSalle St., Chicago, archt. CD 4/11.

Mass., Leominster—THEATRE—Leominster Recreation Assn., Inc., Lionel B. Kavanaugh, chn. Bldg. Comm., 75 Water St., soon lets contract remodeling Rialto Theatre. Approx. $250,000. Plans deposit $35. Harold E. Mason, 53 Merriam Ave., archt.

N. Y., New York—SCHOOL—New York Association for the Blind, 111 E. 49 St., Zone 17, soon lets contract office and training school at 115 E. 59 St. $800,000. Clay Potter & Coulter, 308 E. 50 St., Zone 22, archts. CD 2/4/48.

N. Y., New York—NURSES RESIDENCE—St. Clare's Hospital, 415 W. 52 St., Zone 19, soon lets contract nurses residence and training school 426 W. 52 St. $750,000. Brother Cajetan Baumann, 44 Whitehall St., Zone 4, archt.

N. Y., Poughkeepsie—SCHOOL—Lady of Mt. Carmel, Mill St., soon lets contract, school addn.

N. Y., New Rochelle—SCHOOL—Iona College, 715 North Ave., soon lets contract preparatory school, $500,000. Eggers & Higgins, 542 Fifth Ave., New York, Zone 18, archts.

LOW BIDDERS

Calif., Madera—HOSPITAL ADDN.—Dearborn Hospital, 501 E. Yosemite Ave., rejected bids July 12, 1 story, rein.-con. hospital addn., L. B. $177,000. CD 6/22.

Mass., Brockton — HOSPITAL — Brockton Hospital Co., A. S. Orr, pres., Center St., July 14, addns. and alterations, to hospital bldgs., Center St., from Volpe Constr. Co., Inc., 54 Eastern Ave., Malden, $837,240. CD 6/29.

●**N. Y., New York**—BUILDING—Home and Hospital of the Daughters of Jacob, 167 St., between Findlay and Teller Aves., rejected bids May 3, 10 story annex bldg. on grounds. $2,000,000. Will re-advertise. CD 4/26.

Tex., San Antonio—COMMUNITY CENTER —Brelmeade Corp. c/o Albert Steves, Jr., 716 E. Commerce St., cancelled bids community center, $250,000. CD 5/12.

CONTRACTS AWARDED

Calif., Millbrae — RESIDENCES — Thomas Scoble & Sons, 363 14 Ave., San Francisco, 32 residences in tract between Santa Barbara, Santa Anita, and Lomita Aves., Owner builds. $500,000.

Conn., Hartford — BANK — State Savings Bank, 39 Pearl St., 2 story brick, steel bank addn., heavy fdn. for 2 addnl. stories later, Pearl St., to Wedhams & May Co., 15 Lewis St., Hartford, Approx. $300,000. CD 7/23/48.

●**Conn., Hartford**—HOUSES—Louis B. Rogow, Fairfield Ave., 115 single frame houses, Yale St., Hillside and Fairfield Aves., Owner builds. $1,250,000. CD 7/11.

Del., Claymont—RESIDENTIAL DEVELOPMENT—Cantera Constr. Co., 1508 Penna Ave., Wilmington, residential development Claymont Heights, separate contracts, $250,000.

D. C., Wash. — APARTMENT — Northwest Park Sect. 2, Inc., W. W. Rapley, 1220 H St. N. W., 25 brick, concrete block apartment bldg., incl. 294 units, vicinity of New Hampshire Ave. and Piney Branch Rd., Prince Georges and Montgomery Counties, to Jeffress-Dyer, Inc., 908 20 St., N. W., Victor E. DeMers 1120 A Connecticut Ave. N. W., Wash., archt.

D. C., Wash. — APARTMENT — Northwest Park Sect. 3, Inc., W. W. Rapley, 1220 H. St. N. W., 30 brick, concrete block apartment incl. 354 units, vicinity of New Hampshire Ave. and Piney Branch Rd., Prince George and Montgomery Counties, near here, to Jeffress-Dyer, Inc., 908 20 St., N. W., Victor E. DeMers 1211 A Connecticut Ave. N. W., archt.

Fla., Miami Beach — HOTEL, etc. — Bel-Aire Hotel, c/o contractor joint hotel and restaurant, to Allied Constr. Co., 7317 Collins Ave., Miami Beach, Approx. $300,000.

Fla., St. Petersburg — APARTMENT DEVELOPMENT — Wm. F. Gorman, 5600 4 St. S., apartment development on 6 St. Owner builds, $500,000.

Ga., Atlanta — APARTMENT — Lakemore Apartment Co., 500 Steward Ave. S. E., 21 apartments. Owner builds. $600,000. CD 2/25.

Ga., Valdosta — HOMES — Hicks Realty Co., Valdosta, 65 homes. Owner builds. Over $250,000.

Ill., Chicago—CHURCH—North Park Congregation, 5500 N. Kimball St., Zone 45, 2 and 3 story addn. to church bldg., to Rudenberg & Cohen, 3953 W. 16 St., Chicago, Zone 23, $250,000. D. B. Cheskin, 407 S. Dearborn St., Zone 5, archt. CD 12/11/46.

Ill., Chicago—CONVENT—St. Galls Parish, 5529 S. Sawyer St., Zone 29, 5 story, 43x133 ft. steel, brick convent, to Fr. Burke & Son, 35 S. Dearborn St., Zone 3, $350,000. Barry & Kay, 53 W. Jackson St., Zone 4, archts. Awarded 6/30.

Kan., Kansas City (R. F. D. No. 4)—HOUSING—A. A. Sewell, R. F. D. No. 4, Kansas City, 37 residences, Owner builds, $335,000. C. E. Mullin Fairfax Administration Bldg., Kansas City, Kan., archt.

Kan., Overland Park—HOUSING—Breyfogle Insurance & Real Estate Co., 7537 Santa Fe Dr., Overland Park, 67 dwellings, Owner builds. $500,000.

La., New Orleans—HOUSING—George W. McKay Co., 400 Harlem Ave., 70 homes. Owner builds. Approx. $300,000.

●**Md., Baltimore** — RESIDENCES — College Gardens Corp., 502 Yale Ave., one hundred eighty row houses, 2 story masonry, brick, concrete blocks, 502 to 598 Yale Ave., 600 to 643 Yale Ave., 4200 to 4233 Maiinville Rd., 4300 to 4348 Mainville Rd., 4200 to 4218 Parkton St., to The Delwood Co., 502 Yale Ave., $1,335,000.

Miss., Blue Mountain—DORMITORY—Blue Mountain College, Blue Mountain, dormitory, to L. B. Priester & Son, Meridian. Approx. $250,000.

●**Minn., Minneapolis**—HOUSING—East River Park Corp., (Douglas Rees Assoc.) c/o P. Crosier & Son, archts., 2441 Lyndale Ave. S., general contract nine 11 family unit housing, on East Mississippi River to Sauers Constr. Co., 1540 W. Larpenteur Ave., St. Paul, Approx. $1,000,000. CD 6/22.

Mo., Columbia—HOUSING—Leslie T. Proctor, Hys. 40 and 63 Columbia, 40 dwellings, shopping center, and street paving, $400,000. Owner builds.

Mo., Independence—APARTMENTS—Liberty Manor Inc., Independence, multiple apartments. Owner builds, $349,000. H. E. Duncan, Victor Bldg., Kansas City, Mo., archt. CD 6/22.

Mo., St. Louis—COLLEGE BLDG.—Maryville College of the Sacred Heart, c/o Motther Superior, 2900 Maramec St., Zone 18, brick, concrete college dining hall, theatre and student union bldg. addns., to The L. O. Stocker Co., Arcade Bldg., 812 Olive St., Zone 1, Approx. $400,000. Raymond E. Maritz, Chemical Bldg., 721 Olive St., St. Louis, Zone 1, archt. CD 8/11/47.

Mont., Libby—TELEPHONE BLDG.—Interstate Telephone Co., S. 165 Howard St., Spokane, Wash., telephone bldg., to Walter H. Varnum, Coeur d'Alene, Idaho, $750,000.

Neb., Norfolk — HOSPITAL — Missionary Benedictine Sister, Norfolk, hospital to Hutton Constr. Co., 134 Western Ave., Fond du Lac, Wis., $800,000. CD 1/7/48.

N. J., North Arlington—CHURCH—Queen of Peace, Ridge and Schuyler Sts., 180 Ridgefield Rd., church and rectory, to Joseph Bryan, Heddon Terrace, $950,000. Bids 4/25. CD 4/13.

N. J., Trenton — APARTMENT — Parkside Plaza Apartments, Inc., Earl Cahan Market St., National Bank Bldg., Phila., Pa., apartment bldg., Parkside Ave., separate contracts, $500,000. L. B. Smythe, 12 N. Waren St., archt.

N. Y., Garden City—CHURCH—Garden City Community Church, 67 Hilton Ave., church to Consolidated Constructors, 18 E. 41 St., New York, $300,000. CD 10/6/48.

●**N. Y., Jackson Heights** — APARTMENTS — Queens Heights Land Co., c/o Philip Birnbaum, archt., 303 W. 42 St., New York, Zone 18, six 6 story and two 7 story garden apartments 34 Ave. between 79 and 80 Sts. Owner builds. $3,000,000. CD 4/27.

N. Y., New York — APARTMENT — Lexington House, Inc., c/o Sylvan Bien, archt., 565 Fifth Ave., Zone 17, 12 story apartment at northeast corner of Lexington Ave. and 56 St. Owner builds. $500,000.

N. Y., New York—APARTMENT—Pannonie Realty Corp., 20 E. 53 St., 12 story, penthouse apartment, 32-38 E. 65 St. Owner builds. $750,000. CD 4/16/48.

●**N. Y., New York**—Pierpont Estates, Inc., 36 W. 44 St., Zone 18, 18 story apartment, 40-44 Park Ave. and 37-39 E. 36 St. Owner builds. $2,500,000. CD 10/28/48.

●**N. Y., Rego Park**—APARTMENT—Ritald Realty Corp., c/o Arthur Weiser, archt., 240 Madison Ave., New York, Zone 16, 2 story garden apartment, Grand Central Parkway, 63 Rd., 63 Dr. and 64 Ave. Owner builds. $1,326,000. CD 7/13.

●**N. Y., Rego Park**—HOUSES—Ritald Realty Corp., c/o Arthur Weiser, archt., 240 Madison Ave., New York, Zone 16, 142 houses at Grand Central Parkway, 62 Dr., 63 Ave., 63 Rd. Owner builds. $1,207,000. CD 7/11.

N. C., Lumberton—TELEPHONE—Southern Bell Telephone & Telegraph Co., Hurt Bldg., Atlanta, Ga., telephone bldg., to Henry C. Beck & Co., First National Bank Bldg., Atlanta, Ga. Bids 6/7. (**Correction**—contractor). CD 7/6, under CA.

O., Columbus — DWELLINGS — Larcomb Builders, 780 Oakland Park Ave., 60 dwellings, Kenworth Rd., E. North Broadway and Eddystone Ave., Owner builds. $480,000.

O., Euclid—APARTMENT—Euclid Gardens, Inc., 765 Lakeview Ave., Cleveland, 2 and 3 story apartment at E. 260 St. and Euclid Ave. to Epstein Constr. Co., 765 Lakeview Ave., Cleveland. $700,000. Est. $750,000. CD 5/13.

O., Euclid—HOMES—Sam Feiner, Inc., 2419 Canterbury St., Cleveland Heights, forty-eight 1½ story bsmnt. homes on Walworth Ave. Separate contracts. $768,000.

●**O., Garfield Heights**—STORE BLDG.—Z.M.P. Realty Co., Marshall Bldg., Cleveland, 21 unit store bldg. and bowling alley, parking area on north west corner of Turney Rd. and Plymouth Ave. to Alex Zaremba, 5674 Turney Rd., Approx. $1,000,000. Awarded 7/8. CD 5/20.

Pa., Merion—SCHOOL, GYMNASIUM—Waldron Academy for Boys, Merion, school and gymnasium to McCloskey & Co., 1620 W. Thompson St., Phila., $250,000. CD 5/27.

Pa., Phila.—RESIDENCES—J. R. Casselberry, 5314 Tabor Rd., residential development, 8 St. etc., separate contracts. Approx. $250,000.

Pa., Phila.—RESIDENCES—Harry Fishman, c/o Christian H. Fries, archt., 3701 N. Broad St., residential development Devereaux St., separate contracts. Approx. $500,000.

Pa., Phila.—RESIDENCES—Hyman Korman, 6033 Castor Ave., residential development, E. Harrock St. between Levick St. and Robbins Ave., separate contracts. Approx. $250,000.

Pa., Swarthmore—RESIDENCES—Owner, c/o Andrew C. Borzner, archt., 4 S. 15 St., Phila., residential development, separate contracts. Approx. $350,000.

●**Tex., Corpus Christi**—OFFICE—Sam E. Wilson Jr., Driscoll Bldg., 15 story office, to Henger Constr. Co., Dallas National Bank Bldg., Dallas, $2,500,000. CD 4/8.

Tex., Dallas — DWELLINGS — Brace & Carruth, 1087 W. 41 St., 29 dwellings, Gardenia and LaMonte Sts. Owner builds. Approx. $250,000.

Tex., Dallas — DWELLINGS — Edward T. Dicker, 101 Laurel Land Rd., 150 addnl. dwellings in Beckley Heights. Own forces. $525,000. CD 6/21/48.

Tex., Houston — DWELLINGS — Bon Newkirk & Assoc., Memorial Dr., 10 dwellings. Owner builds. $400,000. CD 7/14.

Tex., Houston — DWELLINGS — Home Owned Properties, Inc., Scanlan Bldg., 20 addnl. dwellings, Sec. 2, Beaumont Pl. Own forces. Approx. $250,000. CD 7/15.

Tex., Houston—HOUSING—J. S. Norman Building Corp., 8815 Richmond Rd., 33 addnl. housing units Beech and Palmetto Sts. Owner builds. Approx. $450,000. CD 7/14.

Tex., Houston—HOUSING—Texas Housing Co. & Assoc., 9001 Denton Dr., 100 low cost housing proj. to Claude K. Williams, 2310 N. Wayside St., Approx. $700,000. CD 7/14.

Tex., San Antonio—HOUSING—Lee & Orts, Gunter Bldg., addnl. housing, North Side, force account, $350,000. CD 6/30.

Tex., Waco—HOSPITAL—Providence Hospital (Daughters of Charity of St. Vicente DePaul) Waco, 5 story bsmnt., 110 bed concrete frame and fdn. hospital addn., air-conditioning, steam heating sys. to Cowdin Bros., 411 S. Haskell St., Dallas, $979,500. Est. $1,059,000. Bids 6/24. CD 7/1, under LB.

Va., Lynchburg—APARTMENT UNITS—Charles L. Ledingham, Lynchburg, 50 apartment units. Owner builds. $360,000.

Wash., Seattle — APARTMENT — Queen Vista, Inc., c/o Stuart & Durham, archt., 1100 Denny Way, 6 story, concrete, masonry apartment, to Hebb & Narodick Constr. Co., Inc., 215 Aloha St., Seattle, Approx. $850,000.

INDUSTRIAL BUILDINGS

BIDS ASKED

After August 1

●**Ill., Kankakee**—PLANT—Kankakee Journal, Kankakee, 1 and 2 story, brick limestone newspaper publishing plant, $1,000,000. Philip D. West, 188 N. Wabash St., Chicago, Zone 1, archt.

August 2

Ont., Toronto—FOUNDRY—E. C. Morgan, archt., 906 Yonge St., Toronto, 2 story, bsmnt., 100x120 ft. and 1 story 40x52 ft. wing, foundry, Laird Dr. at Vanderhoof Ave., for Pease Foundry Co. Ltd., 227 Victoria St., Toronto. Approx. $100,000.

August 5

Calif., South San Francisco—WAREHOUSE ALTERATIONS—E. I. du Pont de Nemours Co., du Pont Bldg., Wilmington, Del., warehouse alterations, over $70,000.

August 8

Ill., Chicago — FREIGHT WAREHOUSES—Chicago, Burlington, & Quincy R. R Co., H. R. Clarke, ch. engr., 547 W. Jackson St., superstructure for 1 story rein.-con. inbound freight warehouse, 1 and 2 story rein.-con. outbound freight warehouse. CD 6/28.

August 9

Ia., Creston—POWER PLANT—Southwestern Federated Power Co-operative, Creston, Sect. 7, incl. steam plant bldg., drainage, bldg. alterations, etc., Sect. 8, electrical work, power plant, Stanley Engrg. Co., Hershey Bldg., Muscatine, engr.

Tex., Amarillo—PLANT—Globe News Publishing Co., Inc., c/o Gene Howe, Amarillo, masonry newspaper plant, concrete slab and beam fdn. $125,000. Plans deposit $50. Macon O. Carder, 419 Fisk Bldg., engr.

Bids Asked

Ill., Chicago—FACTORY—David Berg & Co., 167 S. Water Market St., factory alterations and modernization. $200,000. A Epstein & Sons, Inc., 2011 W. Pershing St., archt.

Pa., Phila.—SHOP—Peco Mfg. Co., Hope St. and Indiana Ave., shop bldg. $70,000. Charles P. Mills, Huntingdon Valley, engr.

●Tex., Alba—REFINERY—Alba Oil & Refining Co., c/o Alba Reporter Publishing Co., Alba, refinery. $1,000,000. CD 7/12.

Wis., Green Bay—GARAGE—Olson Transportation Co., 200 Mather St., 1 story 102x238 ft., concrete blocks, brick, steel, garage, concrete fdn. H. W. Williams, 516 S. Van Buren St., archt. CD 7/11.

Ont., Toronto—PLANT—Art Printing Co., 372 Lounge St., 1 story, bsmt., 100x125 ft., concrete, brick plant, E. I. Richmond, 455 Spadina Ave., archt.

Calif., Daly City — SALES and SERVICE — Mission Auto Co., 6465 Mission St., soon lets contract 1 story, bsmnt., rein.-con. auto sales and service bldg. Mario Ciampi, 333 Kearny St., San Francisco, archt.

SOON LETS CONTRACT

Conn., Greenwich—SALES and SERVICE, etc.—Town and Country Motors, 379 Greenwich Ave., soon lets contract 1 story auto sales and service, showroom and garage, Middlebank Ave., $70,000. Urso & Massari, 1 Bank St., Stamford, archts.

Ga., Macon—WAREHOUSE—Pomona Products Co., c/o Mac-Ewen, & Hall & Ferguson, archts., Bankers Insurance Bldg., Macon, soon lets contracts 30,000 sq. ft. warehouse.

Minn., Minneapolis — FACTORY — Pioneer Paper Box Co., 1417 Washington Ave. S., soon lets contract 1 story, 80x187 ft. concrete factory bldg., 125 19 Ave. S., $70,000. Lang & Raughland, 802 Wesley Temple Bldg., archts.

N. C., Rocky Mount—SALES and SERVICE —Cutchin-Jones Motor Co., c/o Kenneth C. Diehl, archt., Rocky Mount, soon lets contract auto sales and service bldg.

Tenn., Athens—WAREHOUSE—Hiwasse Tobacco Warehouse, c/o Athens Chamber of Commerce, Athens, soon lets contract, 200x400 ft. steel, corrugated iron siding, concrete tobacco warehouse.

LOW BIDDERS

Calif., Redding — PLANT, etc. — Coca-Cola Bottling Co., 1500 Mission St., San Francisco, 1 story, rein.-con. steel bottling plant, warehouse, offices and garage, from H. H. Larsen Co., 64 S. Park St., San Francisco. Approx. $70,000. CD 6/24.

Fla., Miami—PLANT, etc.—McArthur Jersey Dairy Farm, c/o Robert Fitch Smith, archt., 201 Shoreland Bldg., dairy plant and garage, from Fred Howland, Inc., 1451 N.W. 20 St., Miami, $528,340. CD 7/11.

Minn., Elk River—POWER PLANT SUBSTRUCTURE—Rural Co-operative Power Assn., Maple Lake, July 12, general contract substructure power bldg. for generating plant, from Steenberg Constr. Co., W. 1672 First National Bank Bldg., St. Paul, $520,000. CD 6/30.

CONTRACTS AWARDED

●Ark., Forrest City — POWER STATION — Arkansas Power & Light Co., Pine Bluff, erecting power station near here, to Ebasco Services, 2 Rector St., New York, N. Y., $15,000,000. CD 1/14.

Calif., San Francisco—WAREHOUSE— Anglo California National Bank, 1 Sansome St., 30,000 sq. ft. Class C warehouse, to Haas & Rothschild, 27444 Brannan St., San Francisco. Approx. $68,000. J. Francis Ward & John S. Bolles, 369 Pine St., archts.

Calif., Ukiah—GARAGE, etc.—Weber Buick Co., 209 S. School St., 1 story, 55x120 ft. rein.-con. garage and sales bldg., to Francis Constr. Co., 2929 Sonoma Ave., Santa Rosa, $79,950. J. Clarence Feliciano, 4010 Montecito Ave., Santa Rosa, archt.

Del., Seaford—WAREHOUSE—E. I. du Pont de Nemours & Co., Inc., Nemours Bldg., Wilmington, 2 story masonry warehouse, to Rupert Constr. Co., 3409 Lancaster Ave., Wilmington, $100,000. CD 6/7.

Ill., Bellwood — PLANT — Sauerman Bros. Inc., 522 S. Clinton St., Zone 5, 130x260 ft. brick, steel plant, separate contracts. $200,000. J. L. McConnell & Assoc., 53 W. Jackson St., Chicago, Zone 4, engrs.

Ill., Chicago — PLANT — Burny Bros., Inc., 2747 W. Van Buren St., 1 story, brick, steel bakery plant, to Enger Bros., 4910 St. Paul Ave., Approx. $950,000. Bids 5/18. CD 5/16.

Ill., Chicago—PLANT—Cherry Meat Packers, 4742 S. California St., Zone 32, 1 story, 100x191 ft. steel, brick meat packing plant to Martin J. Ingram, 228 N. LaSalle St., Chicago, Zone 1, $156,650. F. M. Bernham, 228 N. LaSalle St., Zone 1, Awarded 6/30.

Ill., Chicago — SUB STATION — Commonwealth Edison, 72 W. Adams St., Zone 3, sub station, 6328 Northwest Highway, to Herlihy Mid-Continent Co., 79 W. Monroe St., Zone 3, $68,000. Shaw Metz & Dolio, 208 S. LaSalle St., Zone 4, archts. Awarded 7/8.

Ill., Chicago—PLANT—General Chemical Co., 12260 Carondalet St., Zone 17, locker room extens. to plant, to R. E. Lekander, 7412 Vincennes St., Zone 21, $70,000. R. F. Carlstedt, 64 W. Randolph St., Zone 1, archt. Awarded 7/8.

Ind., Garrett—FACTORY—Hubbard Spool Co., 1622 W. Carroll St., Chicago, Ill., 1 story, 122x302 ft. factory, 1 story 60x120 ft. warehouse, 1 story 24x100 ft. office, brick steel concrete bldgs., to Bulley & Andrews, 2049 W. Harrison St., Chicago, Ill. Approx. $200,000. W. Fred Dolke, 189 W. Madison St., Chicago, Ill., archt. Awarded 7/8.

Minn., Minneapolis — FACTORY — Minneapolis-Moline Co., Hopkins, 1 story, 50x270 ft. factory, 11 Ave. S., Owner builds. $86,500.

Minn., St. Paul—WAREHOUSE—Cities Service Oil Co., 500 Robert St., 1 story, 153x260 ft. warehouse, Fairview and Thomas Aves., to J. S. Sweitzer & Son, 739 Pillsbury Ave. Approx. $200,000. CD 6/3.

Mo., St. Joseph—PLANT—Wire Rope Corp. of America, 2 and Isadore St., plant, to Glaze Constr. Co., 602 N. 2 St., $75,000. Leo F. Caproni, 1221 Chapel St., New Haven, Conn., engrs. and archts.

N. J., Camden—PLANT—Kaplan & Zurbin, 713 Kaigkin Ave., food processing plant, to S. Levy Co., Broadway & Everett Sts., $70,000. CD 6/8.

N. C., Sanford—PLANT—W. B. Khoury Co., Sanford, mfg. plant to W. L. Jewell, Sanford. Approx. $75,000.

Ore., Portland—FACTORY—T. E. & J. C. deBazor, 1300 S. W. Water St., 3 story factory for Plastic Arts Center to Wilson & Dean, 2023 N.E. 58 St., $175,000. George A Guins, 1135 N. River St., archt. Awarded 7/16.

●Pa., Phila. — RESEARCH LABORATORY — E. I. du Pont de Nemours & Co., Inc., Nemours Bldg., Wilmington, Del., reasearch laboratory to Wark & Co., 1700 Sansom St., $1,500,000. CD 6/1.

Pa., Phila.—MFG. BLDG.—Franklin Process Co., 364 Eddy St., Providence, R. I., mfg. bldg. alterations to Robert E. Lamb & Son, Inc., 3429 N. Indiana Ave., $80,000. Jenks & Ballou, Industrial Trust Bldg., Providence, R. I., archts.

Pa., Phila.—BUILDINGS—Gulf Oil Corp., 30 St. and Penrose Ave., office locker and pump bldg., 3 fire equip. bldgs., 3 shelter bldgs. to Hughes-Foulkrod Co., 1505 Race St., Approx. $68,000. CD 5/27/48.

Pa., Pottstown — MFG. STORAGE — Jarvis Dochler Corp., Pottstown, masonry mfg. and storage bldg., separate contracts. Approx. $68,000.

S. C., Columbia — SALES SERVICE — Oliver Motor Co., c/o Oliver & Dickson, archts., 1226 Pickens St., auto sales and service to R. D. McClure Constr. Co., 2610 Blossom St., $107,411. CD 3/2.

UNCLASSIFIED

BIDS ASKED

August 2

Arkansas—RURAL DISTRIBUTION LINES—Carroll Electric Cooperative, R. G. Gates mgr., Berryville, 283.11 mi. rural distr. lines, Carroll Co; Frank Horton & Co., Lamar, engr. CD 4/1.

Md., Bethesda—TUNNEL—Maryland State Hy. Dpt., 108 E. Lexington St., Baltimore, multiplate pedestrian tunnel, under Bradley Blvd., incl. concrete portals, electric lights, c. conc. paving, Contr. No. M-444-1-315. Montgomery Co. Plans deposit $5.

✈N. M., Albuquerque—STEAM DISTRIBUTION—U. S. Eng., Box 1538, steam distr. sys., Sandia Base. Serial No. 291-50-4. $100,000. CD 7/13—ENR 7/21.

✈West Virginia—MOORING FACILITIES—U. S. Eng., Madison Ave. and 8 St. W., Huntington, Zone 15, mooring facilities above Winfield Locks, Kanawha River. Serial NO. CIVENG-46-022-50-3.

Sask., Big River—DAM—J. M. Somerville, secy., c/o Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., Cowan Dam, Cowan River, 34 mi. from here. Approx. $91,000. Plans deposit $10. R. Blais, c/o owner, engr.

August 4

Mich., Detroit—BUILDING DEMOLITION—State Hy. Dpt., Lansing, bldg. demolition John C. Lodge Expressway, area bounded by Grand River Ave., Temple Ave. and Sixth and Perry Sts., UI 82-127 C13. Plans deposit $3. M. H. Frimodig, ch. eng.

Mich., Detroit—BEACH DEVELOPMENT — Huron-Clinton Metropolitan Auth., 1100 Cadillac Sq. Bldg., Zone 26, bath house, cafeteria, administration, beach comfort stations and first aid bldgs., canopies and paving, St. Clair Metropolitan Beach, Macomb Co., Plans deposit $25., O'Dell, Hewlett & Luchenbach, 2300 Dime Bldg., archts.

Minn., Rochester—UTILITIES—State Dpt. Admin., P. T. Peterson, dir., purchases, 19 State Capitol, St. Paul, tunnel, piping, ventilating, wiring, sanitary sewers, water sys., State Hospital, Cavyon Proj. Plans deposit $10. Ellerby & Co., E. 505 First National Bank Bldg., St. Paul, engrs.

August 5

✈Oregon — TRANSMISSION LINES — Bonneville Power Admin., 729 N.E. Oregon St., Portland, Zone 8, clearing right of way 13.3 mi. for Willamette Forest sect. of Maupin-Detroit 230 kv. transmission line. Inv. 4740. Plans deposit $5.

August 8

Alabama—RURAL DISTRIBUTION LINES — Clark-Washington Electric Membership Corp., Jackson, 376.8 mi. rural distr. lines, Clarke Co. Plans deposit $25. Lanier Eng. Co., Box 453, Troy, engr. CD 7/9/48.

August 9

Texas—RURAL DISTRIBUTION LINES—Comanche County Electric Co-operative Assoc., c/o W. S. Clark, pres., Comanche, 248 mi. rural distr. lines, Comanche, Callahan, Brown and Eastland Counties. $265,000. Plans deposit $25. Freese & Nichols, 407 Daneiger Bldg., Fort Worth, engrs. CD 12/27.

Tex., Houston — ELEPHANT ISLAND — City, Oscar Holcombe, mayor, City Hall, 900 Brazos St., elephant island at zoo, incl. 6 separate pools, shelters. $167,000. Thomas Graeven, 1010 Winbern Ave., archt., R. L. Reed, 1705 W. Gray St., engr. CD 1/19.

✈Va., Fort Eustis — PIER, BOAT SHED — U. S. Eng., foot of Front St., Norfolk, repairing and addns. to pier and boat shed for U. S. Maritime Comn., Serial No. CIVENG-44-110-50-6.

About August 10

Missouri—RURAL DISTRIBUTION LINES —Black River Electric Co-operative, Ironton, 132 mi. rural distr. lines, K-L-M section, Iron Co. Frank Horton & Co., Lamar, engrs. CD 2/28.

August 11

✈Wyoming—STRUCTURAL STEEL—Bureau Reclamation, Dpt. Interior, Bldg. I-A, Denver Federal Center, Denver, Colo., furnish. and del. f.o.b. cars at shipping point or f.o.b. cars at Casper, Wyo., misc. structural steel and handrailings for Kortes Dam and power plant, Kortes Unit, Missouri River Basin Proj. Spec. 2738. L. N. McClellan, ch. engr.

August 16

✈Arizona - California - Nevada — TRANSFORMERS — Bureau Reclamation, Dpt. Interior, Bldg. I-A, Denver Federal Center, Denver, Colo., furnish. and del. f.o.b. cars at shipping point or f.o.b. cars at Boulder City, Nev., power transformers for Unit A-9 Hoover Power Plant, Canyon Proj., Spec. 2736. L. N. McClellan, ch. engr.

About August 25

✈N. C., Fort Bragg—FIELD HOUSE, SWIMMING POOL — U. S. Eng., 308 Customhouse, Wilmington, field house and swimming pool. Inv. No. Eng-31-075-50-1.

August 26

●✈Oregon—GENERATORS, etc.—U. S. Eng., Pittock Block, Portland, Zone 5, furnish, install, test two 55,555 kva a.c. generators and appurtenances for Detroit Dam on North Santiam River, $2,000,000.

Bids Asked

La., New Orleans—RADIO STATION—Texas Star Broadcasting Co., 4000 Main St., Houston, high powered radio broadcasting station, across Lake Pontchartrain, $328,000.

LOW BIDDERS

Ariz., Phoenix—FIRE ALARM SYSTEM—City, Phoenix, modernization of city fire alarm sys., installing 493 new boxed, reconditioning 145 present boxes and constructing central fire-alarm sys. headquarters, from Gamewell Co., Newport Upper Falls, Mass., $678,799.

Calif., San Francisco—TRACK REMOVAL—Dpt. P. Wks., City Hall, July 13, track removal on Mission St. the Embarcadero to Excelsior Ave., etc., from Eaton & Smith, 715 Ocean Ave., San Francisco, $730,059.

Calif., San Francisco—CARHOUSE ALTERATIONS—Pub. Utilities Comn., City Hall, Geary St., Carhouse alterations for trolley coach operations, Spec. 314, from Empire Constr. Co., Ltd., 344 Harriett St., San Francisco, $269,800. CD 6/30.

Ind., Butlerville—UTILITY TUNNEL—State of Indiana, P. Wks. & Supply Div., Walter R. Mybeck, dir., 404 State House, Indianapolis, July 14, rein.-con. utility tunnel, State School, Muscatack Colony, from A. L. Young Co., North Madison, **$124,352.** Est. $130,000. CD 6/28.

Iowa — RURAL DISTRIBUTION LINES — Harrison County Rural Electric Co-operative, July 12, 240.32 mi. rural distr. lines, Harrison Co., Proj. Iowa 15H, Harrison, from Cushing & Murfield, Woodbine, **$284,910.** CD 6/30.

Missouri—RURAL DISTRIBUTION LINES —Black River Electric Co-operative, J. E. Perringer, pres., Ironton, July 7, 178.5 mi. rural electric lines, 7.5 mi. conversion lines, Madison, Bollinger and Wayne Counties, Proj. Missouri 38EI Reynolds, Sect. E of system, from R. & M. Constr. Co., Ottawa, Kan., **$7,792.** CD 6/23.

Missouri—RURAL DISTRIBUTION LINES —Scott-New Madrid-Mississippi Electric Co-operative, Inc., Sikeston, July 11, 138.2 mi. rural distr. lines, Bollinger, Cape Girardeau, Mississippi, New Madrid, Scott and Stoddard Counties, Missouri Proj. 31H and K, Mississippi, from Southern Line Constr. Co., 818 Falls Bldg., Memphis, Tenn., **$160,071.** CD 7/5.

N. Y., Syracuse—GRANDSTAND BLEACHERS—Dpt. Pub. Wks., Albany, July 15, grandstand bleachers at Race Track, Syracuse State Fair Grounds from A. P. Williams Iron & Bronze Works, Inc., 430 E. 102 St., New York, Zone 29 **$99,000.** Bids 7/6 rejected L. B **$104,-422.** CD 7/11, under LB.

North Carolina—RURAL DISTRIBUTION LINES—Four County Electric Membership Corp., Burgaw, July 6, 200 mi. rural distr. lines, Sampson, Dublin, Bladen and Pender Counties, from Sumter Builders, Sumter, S. C., **$208,584.** CD 6/30.

North Carolina—RURAL DISTRIBUTION LINES—Tri-County Electric Membership Corp., Goldsboro, July 8, 200 mi. rural distr. lines, Wayne Co., from Durham Electric Constr. Co., Durham, **$231,706.** CD 6/30.

Texas—RURAL DISTRIBUTION LINES—Concho Valley Electric Co-operative, Bird City, San Angelo, July 12, 150 mi. rural distr. lines, Concho, Nolan, Sterling, Tom Green, Irion, Iron and Mitchell Counties from Willis & Hinders, Olney, $33,984, materials, $86,609. Total **$129,984.** Est. $135,000. CD 6/28.

●**Que., Montreal**—TUNNELS—Dpt. Transport, Hunter Bldg., Ottawa, Ont., and City of Montreal, July 13, 488 Ft. St. Remi St. Subway, vehicular tunnel, under Lachine Canal, from Atlas Constr. Co. Ltd., 4787 St. Catherine St. W. Approx. **$6,000,000.** CD 6/20.

CONTRACTS AWARDED

Alabama—RURAL DISTRIBUTION LINES —South Alabama Electric Cooperative, Troy, 109.3 mi. rural distr. line, to Clyde C. Wood & Co., 711 Virginia St., Mobile, Ala., **$116,407.** Lanier Engineering Co., 102½ Elm St., Troy, engrs. CD 11/13/44.

Arkansas—RURAL DISTRIBUTION LINES —Arkansas Valley Electric Co-operative Corp., Ozark, 123.77 mi. rural distr. line, Johnson Co., to B. B. Winsett, Shrine Bldg., Memphis, Tenn., **$154,858.** H. B. Gieb & Assoc., 1207 Texas Bank Bldg., Dallas, Tex., engrs.

Arkansas—RURAL DISTRIBUTION LINES —Woodruff Electric Co-operative, Inc., Augusta, 321 mi. rural distr. line, Woodruff Co., to Line Constr. Co., Clarksdale, Miss., **$307,-738.** Chanaberry Engineering Co., Inc., 309 S. Third St., Louisville, Ky., engrs. CD 6/17.

Calif., Quincy—EXHIBIT BLDG.—Plumas County Fair Assn., Quincy, 40x100 ft. wood frame exhibit bldg., at County Fairgrounds, to C. D. Mitchem, Quincy, **$19,987.** CD 4/1.

Ga., Atlanta—TELEVISION TOWER—Constitution Publishing Co., 11 Forsyth St. S.W., radio television tower, to Interstate Electric Equip. Co., c/o owner. Approx. **$100,000.**

Ga., Columbus—RADIO STATION—J. W. Woodruff, Jr., c/o contractor, radio station, to Bland Constr. Co., Columbus. Approx. **$80,000.**

Iowa — RURAL DISTRIBUTION LINES — Sioux Electric Co-operative, Assn., Eugene C. Mulder mgr., Orange City, 49 mi. rural distr. lines, sys. imprvs., Sioux Co., force account, **$210,000.** CD 5/27.

Kansas—RURAL DISTRIBUTION LINES—The Northwest Kansas Electric Co-operative Assn., Inc., Mack Lunn, mgr., Colby, 46 mi. service extens., along C section single phase, Cheyenne and Rawlins Counties, also headquarters bldg., force account, **$200,000.** W. H. Burgwin, Fredonia, engr. CD 6/1.

Missouri—RURAL DISTRIBUTION LINES —Intercounty Electric Co-operative, J. J. Bowles, pres., Licking, 349.52 mi. rural distr. lines, 21.5 mi. conversion work, Maries, Gasconade, Phelps, Crawford, Dent, Texas and Shannon Counties, Proj. Missouri 18 F-1 M & P, Phelps, to Reinhart & Donovan Co., 118 N. W. First St., Oklahoma City, 2, Okla., **$589,000.** Bids 6/9. CD 4/14/48.

Nebraska—RURAL DISTRIBUTION LINES —Southwest Electric Membership Corp., Palisade, rural distr. lines, Sect. 1, Nebraska 86-H-C, Dundy, Hitchcock, Dundy, Chase, Hayes and Red Willow Counties, to W. R. Lindsey, Lindsey Constr. Co., 115 16 Ave. N., Nashville, Tenn., **$435,826.** Bids 7/6, awarded 7/11. CD 6/21.

PROPOSED PROJECTS

WATER SUPPLY

Kan., Paola—City, City Hall, water sys. imprs. **$150,000.**

Mass., Salem—City, City Hall, pumping station, North Beverly, **$220,000.** E. F. Masterson & Son, 18 New Derby St., consult. engr.

Neb., Superior—City, water sys. imprvs. **$100,000.**

●**N. J., Trenton**—City, City Hall, rebuilding water plant and beds, **$3,000,000** to **$4,000,000.** Lewis W. Klockner, City Hall, city water supt. CD 2/11.

Tex., Burnet—City, City Hall, voted **$150,000** bonds WW sys. imprvs., extens. The Marvin Turner Engineers, Nalle Bldg., Austin, engrs.

Tex., Denison—City, City Hall, defeated **$821,000** bonds, WW sys. extens., imprvs. T. C. Forrest Jr., Practorian Bldg., Dallas, engr. CD 6/27.

Tex., Pleasant Grove (Dallas P. O.)—Dallas Co. Water Control and imprv. Dist. 3, 8122 Macon Dr., steel water tower, reservoir, **$56,500;** water well, pump unit, **$28,000;** c.i. water line extens., **$75,000.**

●**Tex., Port Arthur**—City, City Hall, 6 m.g. water plant, **$3,500,000.** Freese & Nichols & Turner, National Standard Bldg., Houston, engrs. M. D. Gates, city engr. CD 12/27.

Tex., Zapata—Zapata Co. Water Control & Imprv. Dist. 1, c/o Juan M. Guellar, Zapata, WW, **$100,000.**

SEWERS, WASTE DISPOSAL

Fla., Mount Dora — City, imprvs., exten. sewerage sys. **$395,400.** Smith & Gillespie, Roberts Bldg., Jacksonville, consult. engrs.

Kan., Paola—City, City Hall, sewers, sewage disposal, **$200,000.**

N. Y., Huntington—Town, sewerage sys. addn., treatment plant. **$125,000.**

●**R. I., East Providence**—Town, Bd. Selectmen, East Providence, disposal treatment plant, **$2,600,000.** Charles A. Maguire, 1015 Turks Hd. Bldg., Providence, engr. CD 12/1/47.

Tex., Bryan—City, Roland C. Dansby, mayor, City Hall, sewage disposal lines, **$175,000.** Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs.

Tex., Denison—City, City Hall, defeated **$679,000** bonds, sanitary sewer extens., imprvs. T. C. Forrest, Practorian Bldg., Dallas, engr. CD 6/27.

●**Tex., Houston**—Nueces Naval Base Water Supply Corp., 2/3 Tangley St., sewage disposal plant outside city limits, **$3,000,000.**

Tex., Pleasant Grove (Dallas P. O.)—Dallas Co. Water Control & Imprvt. Dist. 3, 8122 Macon Dr., addnl. sewer trunk lines, **$50,000;** sewage treatment plant enlargement, **$50,000.**

●**Tex., Port Arthur**—City, A. P. Hancock, mgr., City Hall, sewage filter plant, **$1,100,000.** F. Shutts & Sons, Lake Charles, La., consult. engrs. CD 12/27.

Tex., Zapata—Zapata Co. Water Control & Imprvt. Dist. 1, c/o Juan M. Cuellar, sanitary sewers, **$125,000.**

Wash., Kelso—City, City Hall, sub-trunk sewer and laterals in North Kelso, **$89,395;** lift station, sub-trunks and laterals for area north of Coweeman-Allen St. and east of highway, **$49,325;** pump. plant and Coweeman River crossing, sub-trunks and laterals for Davis Terrace addn. and Mooney Acres, **$46,543;** pumping, sub-trunks and laterals for area south of Walnut St., **$80,000.** C. O. Mannes, city engr.

Wis., Milwaukee — Metropolitan Sewerage Comm., Jones Island, Milwaukee, 2,600 ft., 36 in. vitr. clay, main sewer in 51 St., 3,200 ft., 24 in. vitr. clay, main sewer in Good Hope Rd., **$250,000.** James L. Ferebee, c/o owner, ch. engr.

BRIDGES

●**Illinois and Missouri**—St. Clair., c/o Bd. Co. Supervs., Court House, Belleville, Ill., rein.-con. steel vehicular bridge across Mississippi River, from near Chippewa St., St. Louis, Mo. and Cahokia, Ill. and Parks Airport, State Rt. 3, **$8,000,000.** Sverdrup & Parcel, Syndicate Trust Bldg., 917 Olive St., St. Louis 1, Mo., engrs.

Tex., Palestine—Missouri Pacific R. R. Co., R. P. Hart, ch. engr., Missouri Pacific Bldg., St. Louis 3, Mo., underpass at Reagan St., **$60,000;** overpass at Jackson St., **$70,000.**

Que., Quebec City—Municipality, 105 ft. rein.-con. structure, 44 ft. roadway, 12 ft. sidewalks, over Canadian Pacific R. R. tracks, at Blvd. Charest, A. Trottier, c/o owner, engr. CD 10/1/43.

STREETS AND ROADS

Kan., Eastborough (R.F.D. from Wichita)—Village, Village Hall, paving, **$150,000.** H. R. Hunter, 105 W. English St., Wichita, engr.

Kan., Paola—City, City Hall, street paving, **$200,000.**

Kan., Scott City—City, City Hall, curbs, gutters, blacktopping 45 blocks. Ediger Eng. Co., Administration Bldg., Airport, Wichita, engr.

●**New Jersey**—Jersey Turnpike & Auth., State House, Trenton.

Salem and Bergen Co.—130 mi. new toll superhighway from Deepwater, Salem Co. to George Washington Bridge near Alpine, Bergen Co. **$200,000,000.** Charles M. Noble, ch. engr. Ammann & Whitney, 76 Ninth Ave., New York, N. Y.; O. J. Porter & Co., 55 Meeker Ave., Newark, N. J.; Frederick R. Harris, Inc., 433 N. Broad St., Elizabeth, N. J.; De Leuw, Cather & Co., 150 W. Wacker St., Chicago, Ill.; Coverdale & Colpitts, 120 Wall St., New York, N. Y.; Howard, Needles, Tammen & Bergendoff, 55 Liberty St., New York, N. Y., consult. engrs. CD 7/1.

●**Tex., Beaumont**—Jefferson Co., Courthouse, bond election Aug. 23, road imprv. and paving 28 mi. Precinct 1, **$600,000;** 32 mi. Precinct 2, **$600,000;** 34 mi. Precinct 3, **$600,000;** 26 mi. Precinct 4, **$600,000.** CD 6/30.

Tex., Bryan—City, Roland C. Dansby, mayor, City Hall, street imprvs., paving, **$500,000.**

Tex., Hillsboro—Hill Co. Rd. D'st. 6, Court House, 12 mi. road from vicinity Whitney to area on Brazos River Dam. **$560,000.**

Tex., Kountze—Hardin Co., Courthouse, 2 mi. hardsurfaced road and ⅓ of a bridge over Village Creek on the Hardin Side, **$100,000;** 22½ mi. hardsurfaced road in Dist. 5, **$440,-000,** Silsbee area, for Road Dist. 5, c/o Frank P. Payne, comr., Silsbee.

Tex., Lubbock—Modern Manors, Inc., Lubbock, asph. paving streets, 20,000 lin. ft. concrete curb and gutters, etc. **$150,000.** Parkhill, Smith & Cooper, 14 St., consult. engrs.

Wash., Prosser — Benton Co., Courthouse, imprv. Badger Rd. 12.5 mi. Kiona to Vista. **$100,000.** C. D. Kinder, co. engr.

Wash., Yakima — Yakima Co., Courthouse, imprv. roads in Wiley Heights Dist., **$56,000;** 4.5 mi. Moxee-Parker Hy., **$70,000;** 4 mi. connecting roads at Naches, **$71,000;** connecting roads at Toppenish, **$72,000;** imprv. roads northwest of Sunnyside near Outlook, **$510,000;** Orchard Dist. roads in Selah Heights, **$33,500;** road exten. 2 mi. west from Cowiche School, **$33,-000;** roads west of Yakima, **$18,000.** O. E. Brashears, co. engr.

EARTHWORK, WATERWAYS

●**U.S., Charlestown**—Yards & Docks Annex, Navy Dpt., Arlington, Va., filling in marsh land and expanding naval minecraft base. **$2,000,000.**

Tex., Corsicana—Navarro County Soil Conservation Dist., Corsicana, soil conservation, flood control, irrigation. **$150,000.**

Tex., Eastgate (Liberty P. O.)—Eastgate Water Imprvt. Dist., Liberty, drainage, **$100,-000.**

Tex., Hull — Hull-Daisetta Water Imprvt. Dist., J. P. Richardson, pres., Hull, drainage, **$200,000.**

AIRPORTS AND AIRBASES

●**Fla., Miami**—AIRPORT IMPRVS.—Miami International Airport Auth., Miami, removal Seaboard Air Line R. R. tracks in vicinity, **$3,000,000;** terminal bldg., **$3,000,000;** hotel with swimming pool and shops, **$2,000,000;** runways, ramps and taxiways, **$3,000,000,** at Miami International Airport. CD 6/10/48.

Tex., Beaumont — TERMINAL — Jefferson Co., Courthouse, $460,000 bond election Aug. 23, passenger airlines terminal, **$737,200.** Charles L. Davidson, co. engr. CD 6/30.

FOREIGN

India—Electrical Comn., Govt. of Bombay, Electric Grid Offices, Foreshore Rd., Bombay 1, India, plans dam and tunnel, in connection with Koyna Valley Hydro Electric Scheme.

LATIN AMERICA

Chile, Antofagasta — Municipality, Antofagasta, plans water supply sys., **150,000,000** Pesos.

Chile, Santiago—National Poultry Producers Assn., Santiago, plans poultry packing plants, **10,000,000** Pesos.

Colombia, Bogota—National Railways of Colombia, Bogota, plans plant for preservative treatment of railway ties, **$300,000.**

El Salvador, San Salvador—Republic of El Salvador, San Salvador, plans low cost housing, **$1,800,000.**

Honduras, Tegucigalpa—Glass & Pottery, Inc., Tegucigalpa, plans factory for manufacturing earthenware and glass ware. **$300,-000.**

Mexico, Fortin de las Flores—Mexican Govt., Sra. de D.N., Mexico, D. F., plans tourist resort **$4,000,000.**

Mexico, Mexico City—Cia. Pesquera y Empacadora Mexicana, S. A., San Juan de Letran, 84, Mexico, D.F., plans fish and seafoods cannery and refrigeration plant. **$300,000.**

Mexico, Mexico City—Ildefonso Valencia, Rosario, 83, Mexico, D. F., plans foodstuff refrigeration plant. **$250,000.**

Mexico, Mexico City—Productores e Importadores, S. A. Lic. Fernando Aramburu Pimentel, rep. 20 de Noviembre, 32-306-320, Mexico, D. F., plans grease-dirt disintegrator factory. **$200,000.**

Mexico, Mexico City—S.M. de E., Artes, 45, Mexico, plans 5,000 model homes for members. **$200,000.**

Mexico, Monterrey—Compania Fundidora de Fierro y Acero, Monterrey, plans sheet steel plant, **14,000,000** Pesos.

●**Panama, Paitilla**—Republic of Panama, Panama City, plans slaughterhouse, **$1,000,000.**

Venezuela, Caracas—Compania Nacional de Petroleos, S. A., Caracas, plans development oil bearing plant, **$410,000.**

●**Venezuela, Puerto La Cruz**—Compania Venezolana de Refincasion de Petrloes, S. A., Puerto La Cruz, plans refinery, **$1,000,000.**

PUBLIC BUILDINGS

●**Calif., San Francisco** — HOUSING — Federal Housing Auth., 315 Montgomery St., plans by Henry T. Howard, 605 Market St., and Mark Daniels, 509 Kearny St., San Francisco, Ping Yuem Housing, (231 units). **$3,275,607.**

●**Ill., Freeport** — SCHOOL — City, Bd. Educ., City Hall, plans by Childs & Smith, 20 N. Wacker Dr., Chicago, 6, 2 elementary schools, 1 junior high school, **$2,000,000.**

Ind., Decatur—POWER PLANT—City, City Hall, 3,500 kwh diesel engine plant, as auxiliary to municipal power plant, 7 Ave. **$887,000.** Emery, Marker & Emery, Toledo Trust Bldg., Toledo, O., consult. engrs.

Ind., Indianapolis—RESEARCH LABORATORY — Indiana, University, Bd. Trustees Admin. Bldg., Bloomington, plans completed by Robert Frost Daggett, 350 E. Fall Creek Blvd., 3 story, 45x109 ft. and 25x27 ft., brick, stone, rein.-con., steel research laboratory, Indiana Medical Center, W. Michigan St. **$350,000.**

Ind., Knightstown—INFIRMARY—Indiana Dpt. P. Wks. & Supply, Indianapolis, plans by J. H. Wildermuth & Co., 527 Broadway, Gary, Infirmary at Soldiers and Sailors Childrens Home. **$510,000.** CD 11/22/43.

Kan., Jetmore — SCHOOL — Bd. Educ., Jetmore, voted **$350,000** bonds, school. Thomas & Harris, 125½ N. Topeka St., Wichita, archts.

Kan., Lawrence—POLICE and FIRE DEPARTMENT—City, c/o R. O. Burgitt, chn. Bldg. Com., Lawrence, plans by Ossmann & Schober, 416 Central Bldg., Topeka, brick, concrete, steel, police and fire dpt. headquarters, 8 St. between Kentucky and Vermont Sts., **$325,000.** CD 4/26/46.

●**Md., Baltimore**—PSYCHIATRIC UNIT—University of Maryland Hospital, Green and Lombard Sts., plans by J. R. Edmunds Jr., 130 W. Hamilton St., psychiatric unit, **$2,000,000,** nurses home, **$300,000.** CD 2/25.

●**Md., College Park**—COLLEGE BLDGS.—University of Maryland, College Park, plans by Hall, Border & Donaldson, 2111 N. Charles St., Baltimore, chemistry class room, etc., **1,700,000;** plans by Gaudreau & Gaudreau, 527 N. Charles St., Baltimore, 1 and 2 story brick, girls gymnasium with swimming pool, **$200,000;** plans by Johannes & Murray, 8081 Georgia Ave., Silver Springs, greenhouse, headhouse, plant labs., **$130,000.** CD 10/15/45.

Md., Salisbury—SUB-STATION—University of Maryland, College Park, plans by Malone & Wilkins, Salisbury, sub-station, **$100,000.**

Mass., Beverly—HOUSING—City of Beverly Housing Auth., Beverly, plans by R. Thibedeau, 81 Washington St., Salem, 76 unit, 2 story veterans housing, Sawyer Rd. and Derrick St. **$760,000.** CD 11/10.

Mass., Gloucester — HOUSING — City of Gloucester Housing Auth., P. A. Polisson, chn., plans by Thomas Worcester, Inc., archt. and engr., 84 State St., Boston, 40 unit veterans housing, **$400,000.**

Mass., Hanson—SCHOOL—Town, Town Hall, plans by Wm. L. Upham, 700 Washington St., Norwood, 2 story, bsmnt., brick school, Approx. **$250,000.**

●**Mass., Holyoke**—HYDRO ELECTRIC PLANT —Holyoke Water Power Co., Robert E. Barrett, pres., Holyoke, brick, steel, concrete hydroelectric plant, site of dam, Connecticut River, **$4,162,000.**

Mass., Lowell — PAPER and LEATHER ENGINEERING — Commonwealth of Massachusetts, Dpt. Educ., 200 Newbury St., Boston, plans by Krokyn & Browne, 184 Boylston St., Boston, 3 story, bsmnt., brick, steel paper leather engineering bldg., **$750,000.**

Mass., Needham Heights — SCHOOL — Town Supt. Schools, Needham, plans by W. G. Upham, 700 Washington St., Norwood, school, Tower St. **$476,500.**

Mass., North Cambridge—HOUSING—City of Cambridge Housing Auth., 1416 Massachusetts Ave., plans by W. L. Galvin, 38 B Brattle St., Cambridge, 66 unit brick veterans housing, Walden St., **$660,000.**

Mass., Ware—SCHOOL—Town, School Dpt., Ware, plans by W. G. Upham, 700 Washington St., Norwood, high school. Approx. **$250,000.**

Minn., Minneapolis — STUDENT UNION — University of Minnesota, R. S. Callaway, purch. agt. 323 Administration Bldg., Main Campus, plans by Magney, Tusler & Setter, 202 Foshay Tower, student union bldg. **$400,000.**

Minn., Owatonna—COTTAGES—State Dpt. Admin., State Capitol, St. Paul, plans by Haxby, Bissell & Belair, 1111 Nicollet Ave., Minneapolis, 2 cottages, (dormitories) at State School. **$320,000.**

Minn., Red Wing — SCHOOL — State Dpt. Admin., State Capitol, St. Paul, plans by E. D. Corwin, 818 E. First National Bank Bldg., St. Paul, bldg. at State Training School. **$450,000.**

●**O., Cleveland**—LIGHT PLANT—City, City Hall, Cleveland Municipal Light Plant addn. **$9,000,000.** Burns & McDonnell Eng. Co., 1404 E. 9 St., consult. engrs. CD 4/3/44.

O., Cuyahoga Falls—SCHOOL—Bd. Educ., **$800,000** bond election Nov. 8, East School and New West Side School.

●**S. C., Charleston**—HOUSING—City Housing Auth., Charleston, 2 low cost housing, **$2,000,000.**

●**Tenn., Knoxville**—SCHOOL—City, City Hall, plans by A. C. Hudson & Retenbach Eng. Co., 406 W. 5 Ave., East Knoxville High School, **$1,000,000.** CD 1/27/47.

●**Tenn., Nashville** — HOSPITAL — Tennessee T. B. Hospital Comn., State Capitol, Nashville, T. B. Hospital for Middle Tennessee, **$3,000,000.**

Tex., Arlington — CLASSROOM — Arlington Independent School Dist., Arlington, W. R. Wimbish, supt., **$200,000** bond election July 23, masonry classroom, **$250,000.**

Tex., Baytown—COLLEGE—Goose Creek Independent School Dist., Baytown, voted $475,000 bonds Lee Junior College, **$900,000,** H. Voelcker & Assoc., 2801 San Jacinto St., Houston, archts. CD 6/27.

Tex., Bryan—POWER PLANT—City, Roland C. Dansby, mayor, City Hall, installing 5,000 kw steam turbine and generator, electric power plant, **$700,000.** Thomas Bryan & Assoc., M. & M. Bldg., Houston, engrs.

●**Tex., Tyler**—SCHOOLS—Independent School Dist., Tyler, bond election Sept. 27, negro elementary and high schools, **$300,000;** negro elementary school, **$250,000;** elementary school, southeast sect. of city, **$250,000;** elementary school, northwest sect. of city, **$275,000;** Dunbar School, **$275,000;** gymnasium and vocational shops, **$250,000.** Shirley Simons, Tyler, archt. CD 6/10.

Vt., Barre—SCHOOL—City, Supt. Schools, plans by W. G. Upham, 700 Washington St., Norwood, Mass., Senior High School, **$466,600.**

Wash., Centralia — SCHOOL — School Bd., Centralia, plans by W. A. Johnson, First National Bank Bldg., Everett, 1 story, brick, steel, Washington School, **$400,000.** CD 11/24.

Alaska, Ketchikan—HIGH SCHOOL—City, plans by W. A. Johnson, Everett, Wash., 2 story, rein.-con. high school. **$543,000.** Hawthorne Eng. Service, Ketchikan, consult. engr. CD 3/7/46.

Alta., Foremost — SCHOOL — School Bd., Foremost, school, **$250,000.**

COMMERCIAL BUILDINGS

●**Ill., Chicago**—APARTMENT—7500 South Shore Dr. Corp., 100 W. Monroe St., Zone 3, plans by Frank A. McNally & Assoc., 105 W. Monroe St., Zone 3, 5 story, rein.-con., brick apartment. **$1,250,000.**

Ill., Chicago—CONVENT—Vincent de Paul Parish, 1010 W. Webster St., Zone 14, plans by Edo J. Belli, 8 St. Dearborn St., Zone 3, 2 story, steel, brick, stone convent, **$450,000.**

Ind., Fort Wayne—Alfred and Max Polland and James Robbins, Gary, 103 unit River View Terrace apartment, 3 acre tract facing Griswold Dr., near St. Joe River, south of State Blvd. **$830,000.**

●**N. Y., Brooklyn** — APARTMENT — Bay Shore Gardens, Inc., 615 Avenue K., Zone 18, plans by Seelig & Finkelstein, 153 Pierrepont St., Zone 2, 6 story apartment, 14 and 26 Cass Pl. and 2906-12 Brighton 12 St., **$1,000,000.**

●**N. Y. Brooklyn** — APARTMENTS — Manhattan House, Inc., 285 Grand Ave., New York, Zone 2, plans by Oscar I. Silverstone, 153 Pierreport St., Zone 2, 3 six story apartments, 200-11 Brighton 15 St. and 1511 - 21 Brightwater Ave., **$2,024,000.**

N. Y., Brooklyn — APARTMENT — Newstrand Realty Corp., 44 Court St., Zone 2, plans by Kavy & Kavovitt, 44 Court St., Zone 2, 6 story apartment, 1405-61 Brooklyn Ave., **$792,000.**

●**N. Y., Jackson Heights**—APARTMENT—PMI Co., c/o Kavy & Kavovitt, archts., 44 Court St., Brooklyn, Zone 2, apartment, 87 St. south of 37 Ave., **$1,176,000.**

N. Y., Rockaway Beach—HOTEL, etc.—Nunick Realty Co., c/o N. Lederer & L. Joseph, archts., 1117 Bay Park Pl., Far Rockaway, 5 story hotel and cabaret bldg., Ocean Front between Beach 128 and Beach 129 Sts., **$300,000.**

N. Y., Woodside—APARTMENT—Sunwood Homes, Inc., c/o R. Lindheim, 668 Lexington Ave., New York 22, N. Y., 3 story apartment, 39 Rd. between 52 St. and Woodside Ave., **$300,000;** 3 story apartment, 39 Avenue between 52 St. and Woodside Ave., **$200,000.**

O., Cleveland — CHURCH — Our Lady of Peace, 12505 Buckingham Rd., plans by Stickle, Lelly & Stickle, 2422 Prospect Ave., 1 story, 50x150 ft. 900 seating capacity limestone, brick church, **$300,000.**

O., Cleveland Heights — CHAPEL, etc. — Church of the Savior, 3537 Lee Rd., sketches by Travis G. Walsh, 408 Cuyahoga Savings & Loan Bldg., Cleveland, 2 story, bsmnt., brick, stone chapel and educational bldg., Lee Rd. and Bradford St., **$300,000.**

Pa., Sharon—SYNAGOGUE—Temple Beth Israel, Sharon, synagogue in Highland Road Dist., **$270,000.**

Tenn., Jackson—CLINIC—Clinic, Inc., c/o J. Frazier Smith, Inc., archts., Goodwyn Institute Bldg., Memphis, clinic, **$300,000.**

Tex., Dallas—SOCIAL CENTER—First Baptist Church, 606 N. Ervay St., plans by John S. Danna, 2618 Cedar Springs Rd., masonry gymnasium and youth social center. **$250,000.**

●**Tex., Houston**—HOUSING—Brace & Carruth, 1087 W. 41 St., addnl. 29 dwellings, Gardenia and LaMonte Sts., **$260,000;** addnl. 200 dwellings, Sect. 6, Oak Forest, **$1,600,000.**

●**Tex., Houston**—OFFICE—Glenn H. McCarth Interests, Shell Bldg., plans by Wyatt C. Hedrick, 5201 Fannin St., 16 to 18 story office, **$2,000,000.**

●**Tex., McKinney** — HOUSING — McKinney, Housing Auth. F. Dudley Perkins, chn., McKinney, 500 housing units, **$3,500,000.**

●**Wash., Seattle**—APARTMENT—P. D. Wick, C. H. Dahlgren, F. T. Ahlson and C. T. Miller, Campbell Bldg., plans by Miller & Ahlson, Campbell Bldg., 15 story, rein.-con. apartment. **$1,250,000.** CD 5/3/27.

Wis., Fox Point (Milwaukee P.O.)—CHURCH —Fox Point Evangelical Lutheran Congregation, 205 E. Calumet Rd., Zone 11, Milwaukee P. O., plans by Grassold & Johnson, 734 N. Jefferson St., Milwaukee, Zone 2, church, **$350,000.**

Wis., Rhinelander—HOSPITAL—Sisters of the Sorrowful Mother, 6718 Cedarburg Rd., Milwaukee, Zone 9, St. Mary's Hospital addn., **$500,000.**

●**Ont., Ottawa** — HOUSING — Manor Park Realty Co., 69 Sparks St., K. B. Davis, secy., 204 multiple dwellings, Manor Park Area, Rockcliffe. Approx. **$1,224,000.**

Que., Montreal—HOTEL—G. W. McGregr, c/o Adelphi Theatre, 54 St. New York, N. Y., U. S. A., 110x160 ft. hotel. Guy St. **$350,000.**

Que., Ste. Adele—CHURCH—Roman Catholic Parish of Ste. Adele, Ste. Adele, plans by H. Labelle, 3 Kelvin Ave., Outremont, concrete, stone church, **$275,000.**

Que., St. Simon de Drummond—CHURCH—Parish of St. Simon de Drummond, Rev. E. Laforest, cure, plans by Deshaies & Despocas, 3445 Cote des Neiges Rd., Montreal, church. Approx. **$300,000.**

INDUSTRIAL BUILDINGS

Ia., Des Moines—WAREHOUSE—Winston & Newell Wholesale Grocery Co., 118 4 St., warehouse addn. **$500,000.**

Kan., Wichita—GARAGE—Owner, c/o Overend & Boucher archts., 1005 Broadway, 5 story, 150x150 ft., rein.-con., brick commercial garage, incl. rein.-con. ramps, etc. **$300,000.**

Kan., Wichita—GARAGE—Owner, c/o Overend & Boucher, archts., Brown Bldg., 5 story commercial garage, **$300,000.**

Minn., Fosston—PLANT—Fosston Co-operative Creamery, Fosston, plans by M. & G. Buetow, 1931 University Ave., St. Paul, 1 story, 100x235 ft., rein.-con., brick poultry and egg locker plant. **$175,000.**

N. J., Jersey City—WAREHOUSE—General Foods Co., 250 Park Ave., New York, 17, N. Y., warehouse, Waldo Ave. near Academy St., **$300,000.**

N. Y., Brooklyn—GARAGE—Kinway Realty, Inc., 16 Court St., Zone 2, plans by Joseph B. Yesselman, c/o owner, garage, 54-65-Kermit Pl. **$120,000.**

Ore., Madras—MILL—Warm Springs Lumber Co., Madras, replacing planer mill, **$150,000.**

Ore., Portland—PLANT—Kaiser-Frazer Motor Co., Willow Run, Mich., plans by Wolff & Phillips, Pearson & Ave. Bldg., motor car assembly plant, **$500,000.**

Tenn., Murfreesboro—PLANT—A. H. Poppe, New Bremen, O., dehydrating plant. **$200,000.**

Tex., Houston—WAREHOUSE—Felix Doran, Jr., 3916 Main St., Dallas, masonry, steel warehouse, adjacent Highland Industrial Terminal, **$275,000.**

●**Tex., New Ulm**—ABSORPTION PLANT, etc. —McCarthy Oil & Gas Corp., Shell Bldg., Houston, gasoline absorption plant, **$5,500,000;** area gas lines, **$250,000.**

Tex., Sweetwater—PLANT—Lone Star Cement Corp., First National Bank Bldg., Dallas, cement plant, near here. **$250,000.**

Va., Roanoke — LAUNDRY — Magic City Laundry, 902 13 St. S.W., rebuilding laundry, Approx. **$100,000.**

Alta., Edmonton — WAREHOUSE, etc. — Gaults Alberta Ltd., Revillon Bldg., plans by C. V. McKernan, 3 Credit Fancier Bldg., warehouse and offices, Approx. **$300,000.** CD 4/26.

Alta., Peace River—WAREHOUSE—Marshall Wells, Peace River, warehouse, **$100,000.**

Ont., Toronto—PLANT—Lily Cups Ltd., Listowel, 1 story plant, **$500,000.**

Ont., Toronto — PLANT, etc. — Longworth Milling Co. Ltd., 7 Vine Ave., plant and warehouse, **$200,000.**

Ont., Toronto—MILL—Morris Summit Gold Mines Ltd. c/o E. M. Thompson, pres., 86 MacLean St., mill, and 7.5 mi. road to Salmon Gold Mines, **$100,000.**

UNCLASSIFIED

Conn., Stratford—TELEVISION STATION—National Broadcasting Co., Radio City, New York, N. Y., 250 ft. antenna residential type television station bldg. for experimental broadcasting Broadmere Rd., **$250,000.**

Ill., Springfield—GOLF COURSE—City, City Hall, project abandoned, golf course, Lake Springfield, **$100,000.** CD 7/1.

Kansas—RURAL DISTRIBUTION LINES—Butler Rural Electric Co-operative, El Dorado, rural distr. lines, sys. imprvs., Butler, Harvey, Marion and Sedgwick Counties, **$100,000.** Frank Horton & Co., Lamar, Mo., consult. engrs.

Kansas—RURAL DISTRIBUTION LINES—Pioneer Co-operative, Assn., Ulysses, 299 mi. rural distr. lines, sys. imprvs., 8 mi. tie lines, two-way radio, headquarter facilities, generating plant, Grant, Stevens and Stanton Counties, **$556,000.** Frank Horton & Co., Lamar, Mo., engrs.

Kansas—RURAL DISTRIBUTION LINES—Sugar Valley Electric Co-operative, Mound City, 140 mi. rural distr. lines, Anderson, Bourbon, Linn and Miami Counties, **$317,000.** Frank Horton & Co., Lamar, Mo., engrs. CD 10/9/46.

Minnesota—RURAL DISTRIBUTION LINES—Brown County Rural Electric Assoc., Sleepy Eye, 95 mi. rural distr. lines, sys. imprvs., Brown Co. **$605,000.**

Mississippi — RURAL DISTRIBUTION LINES—Central Electric Power Assn., Carthage, 300 mi. rural distr. lines, sys. imprvs., Leake Co. **$623,000.**

Mississippi — RURAL DISTRIBUTION LINES—Delta Electric Power Assn., Greenwood, 314 mi. rural distr. lines, sys. imprvs., Le Flore Co. **$885,000.**

Mississippi — RURAL DISTRIBUTION LINES—Tippah Electric Power Assn., Ripley, 358 mi. rural distr. lines, Tippah Co. **$575,000.**

●**Mo., St. Louis**—RAILROAD TRACKS—City Frank J. McDevitt, pres. Bd. P. Service, 304 City Hall, 12 and Market Sts., Zone 3, and Terminal Railroad Assn., Armstrong Chinn, pres., 1800 Market St., Zone 3, concealment railroad tracks, river front south of Eads bridge connections, with elevated tracks, etc. **$6,340,692.**

Nebraska—RURAL DISTRIBUTION LINES—Norris Rural Public Power Dist., Beatrice, 176 mi. rural distr. lines and sys. imprvs. Norris Co. **$371,000.**

●**N. Y., Brooklyn**—SUBWAY—Bd. Transportation, 250 Hudson St., New York, Zone 13, connection between end of Fulton St. subway line and Fulton St. B.M.T. Elevated line to Liberty Ave. and 119 St., Richmond Hill, to be known as Pitkin-Liberty Avenue Route, construction **$4,434,000.** equip. **$11,711,000,** demolition of elevated structure Between Rockaway Ave. and Hudson St. **$1,168,000.** CD 8/31/45.

Ohio — RURAL DISTRIBUTION LINES — Belmont Electric Co-operative, St. Clairsville, 52 mi. rural distr. lines and sys. imprvs., Belmont Co. **$455,000.**

Ohio — RURAL DISTRIBUTION LINES — Paulding-Putnam Electric Co-operative, Paulding, 27 mi. rural distr. lines and sys. imprvs., Paulding Co. **$165,000.** CD 10/15/47.

Oklahoma—RURAL DISTRIBUTION LINES—Northfork Electric Co-operative, Savre, 353 mi. rural distr. line and sys. imprvs., Beckham Co., **$540,000.**

Ore., Springfield — POWER SYSTEM — City, City Hall, voted **$800,000** bonds municipal power sys. John H. Quiner, City Hall, city engr. CD 6/3.

Tex., Bryan — ELECTRIC DISTRIBUTION SYSTEM—City, Roland C. Dansby, mayor, City Hall, electric distr. sys. addns. **$100,000.** Thomas Bryan & Assoc., M & M Bldg., Houston, consult. engrs.

Tex., Palestine—TRACK, etc.—Missouri Pacific R. R. Co., R. P. Hart, ch. engr., Missouri Pacific Bldg., St. Louis 3, Mo., roadbed and laying 2 mi. new track for connection with Houston Texas line, **$50,000;** removing, reconnecting portion railway yards. **$80,000.**

Tex., Sherman—TELEVISION STATION—Hugh E. Prher & Assoc., c/o 25 Highland Park Shopping Village, Dallas, television station, **$100,000.**

●**Wisconsin**—RURAL DISTRIBUTION LINES, etc.—Dairyland Power Co-operative, La Crosse, 66 mi. rural distr. 69kv and 29 mi. 34.5kv. rural distr. lines, 15,000 kw. plant at Cassville, 10 new sub-stations, office and warehouse near La Crosse, La Crosse Co. **$8,400,000.**

●**Manitoba** — RURAL ELECTRIFICATION SYSTEM, etc.—Province of Manitoba, Dpt. Mines & Resources, Winnipeg, rural electrification sys. extens., hydro-electric power plant, **$25,000,000.**

Que., Montreal — VAULTS — Municipality, city hall vault enlargement. **$250,000.** H. A. Gibeau, city engr.

Saskatchewan—RURAL ELECTRIFICATION SYSTEM—Province of Saskatchewan, Dpt. Resources & Development, Regina, rural electrification sys. **$5,000,000.** CD 6/18/47.

Proposal Advertisements see pp. 78 to 81

OFFICIAL PROPOSALS

RATE: THE RATE FOR OFFICIAL PROPOSAL ADVERTISING IS $1.00 PER LINE (OR FRACTION) PER INSERTION

COPY RECEIVED UP TO 10:00 A. M. FRIDAY FOR ISSUE OUT NEXT THURSDAY SUBJECT TO SPACE OPEN FOR LAST MINUTE ADS

SEND COPY TO OFFICIAL PROPOSAL DIVISION, ENGINEERING NEWS-RECORD, 330 W. 42ND ST., NEW YORK 18, N. Y.

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2741) will be received by Bureau of Reclamation, Provo, Utah, August 23, 1949, and then publicly opened for furnishing labor and materials and performing all work for the construction of Murdock Diversion Dam and Provo Reservoir Canal, station 2+86.37 to station 5+55, Provo River Project, Utah. The work is situated about 6 miles north of Provo, Utah. Principal items are approximately: 10,000 cu. yds. excavation; placing 2,000 cu. yds. concrete; placing 90 tons reinforcement bars; installing 115,000 lbs. fish screens, hoists, and miscellaneous metalwork; and other work. Time allowed for completion will be 270 days. For particulars, address Bureau of Reclamation, Provo, Utah; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(275)

OFFICIAL PROPOSALS

Bids: August 11, 1949 (274)

Reconstruction of Roadway

Commonwealth of Massachusetts. Metropolitan District Commission. Sealed bids or proposals will be received by the Metropolitan District Commission at its office, 20 Somerset Street, Boston, until 1 P.M., D.S.T., Thursday, August 11, 1949 and at that time and place will be publicly opened and read. The work to be done consists of reconstruction of Roadway of Harvard Bridge over Charles River, Charles River Reservation, Boston and Cambridge. Charge for specification is $2.00, which amount is returnable only to bidders. Proposal guarantee shall consist of a certified check for $15,000.00 payable to the order of the Commonwealth of Massachusetts. Attention is called to the minimum rates of wages to be paid on the work as determined by the Commissioner of Labor and Industries under the provisions of Chapter 461 of the Acts of 1935. Complete information may be obtained from the office of the Commission. The right is reserved to reject any or all proposals.

By: William T. Morrissey,
Commissioner

July 18, 1949

Bids: August 17, 1949 (263)

Spillway Generating Station

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
SANTEE-COOPER PROJECT

1. TIME AND PLACE OF OPENING BIDS:

Sealed proposals will be received by the South Carolina Public Service Authority at its office in Moncks Corner, S. C., until 11:00 A. M. August 17, 1949, for the construction of *Spillway Generating Station* at which time and place the proposals will be publicly opened and read.

2. PROCUREMENT OF PLANS AND SPECIFICATIONS:

Proposals must be submitted on forms to be furnished by the Authority. These forms along with other contract documents, including plans and specifications, may be obtained from the Office of the Chief Engineer of the Authority, Moncks Corner, S. C., upon payment of $25.00 deposit per set. The deposit will be refunded upon the return of the documents in good condition within 30 days of the date of receiving bids.

3. DESCRIPTION OF THE WORK:

Furnish all materials, excavate for and construct the concrete substructure and superstructure for a 2500 Kva hydro-electric generating unit to be located at existing spillway.

Excavate tail canal of approximate length of 450 ft., and rip-rap banks adjacent to powerhouse structure.

Erect hydraulic turbine furnished by others which will drive 2500 Kva generator to be furnished and installed by others.

Construct penstock supports and erect penstock and taintor valve both of which will be furnished by others.

Install step-up transformer, switchgear and accessories furnished by others.

Construct approximately 200 ft. of entrance roadway.

Furnish such miscellaneous items and perform other services as set forth in the plans and specifications.

4. BIDDERS' BOND:

Each bid must be accompanied by a certified check or bidder's bond executed by the bidder and a surety company licensed to do business in South Carolina and countersigned for the surety by an agent or attorney-in-fact who is a bona fide resident of the State of South Carolina, in the sum of not less than five percent of the amount of the bid. This is required as a guarantee that if the bid is accepted, a contract will be immediately entered into and the performance of it properly secured. The certified check or bond will be returned upon non-acceptance of bid or execution of contract.

5. WITHDRAWAL OF BID:

No bid may be withdrawn for a period of thirty days after the date set for the opening of said bid. The Authority reserves the right to reject any or all bids and to waive informalities therein or to accept any bid considered to be most advantageous to the Authority.

6. LICENSES:

An act of the General Assembly of South Carolina approved June 2, 1936 entitled "An act to Regulate the Practice of General Contracting in South Carolina", provides that general contractors (defined as anyone who, for a fixed price, commission, fee or wage, undertakes to construct or superintend the construction of any building, highway, sewer, grading, or any improvement or structure, where the cost of the undertaking is Seven Thousand Five Hundred ($7,500.00) dollars, or more) shall file a written application for general contractors' license with the South Carolina Licensing Board for Contractors, Columbia, South Carolina, said application to be filed thirty days prior to any regular or special meeting of said Board and to be accompanied by the proper fee. (Code of Laws of South Carolina, 1942, Sections 7084-1 to 7084-7, inclusive).

Bidders must satisfy the requirements of the South Carolina State Statutes regarding annual license tax and license tax on each individual contract, as set forth in Section 2543 of the Civil Code of 1942 as amended. Bidders' licenses may be obtained from the South Carolina Tax Commission, Columbia, South Carolina, upon payment of the proper fee.

Each bidder will be required to show evidence of the issuance of such general contractor's and bidder's licenses before his bid is opened or considered.

7. VIEWING SITE:

Prospective bidders will be given assistance in viewing the site of the work upon application to the offices of the Authority at Moncks Corner, South Carolina.

By order of the Board of Directors
SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
By JAMES H. HAMMOND, Chairman
ATTEST: JNO. A. ZEIGLER, Secretary

(Continued on page 79)

OFFICIAL PROPOSALS
(Continued from page 78)

Bids: August 5, 1949 (276)

Denver Municipal Stadium

Sealed bids will be received by the Manager, Improvements and Parks of the City and County of Denver in the State of Colorado in the Council Chamber Room 450, City and County Building, West Colfax Avenue and Bannock Street, until 2:00 o'clock P. M. (Mountain Standard Time) of Friday, August 17, 1949 for the construction of a building to be known as THE DENVER MUNICIPAL STADIUM, at which time and place the bids will be publicly opened and read aloud. The proposed building will be located at 44th Street and 46th Avenue, Denver, Colorado. All bids must be made on the Bid Form furnished with the Contract Documents. Bids received after closing time will be returned unopened.

Plans and Specifications and other proposed Contract Documents are on file at the following offices:

Office of Roland L. Linder, Architect, 507 Insurance Building, Denver, Colorado.

Offices of Roberts and Schaefer Company, Lorimer and Rose, Associated Engineers and Architects, 130 North Wells Street, Chicago 6, Illinois and 254 West 54th Street, New York 19, New York.

Separate bids will be taken for each of the following proposed Contracts; in addition, a combined bid will be taken for proposed Contracts Nos. 2 and 3; and a combined bid will be taken for proposed Contracts Nos. 4 thru 6.

Contract No. 1. General Construction Work.

Contract No. 2. Heating, Ventilating and Air Conditioning.

Contract No. 3. Plumbing and Fire Protection.

Contract No. 4. Electrical Power and Lighting.

Contract No. 5. Ice Rink, Complete, Including Refrigeration and Ice Rink Floor Construction.

Contract No. 6. Wells and Pumping Equipment.

A set of Plans and Specifications and other Contract Documents may be obtained from the office of Roland L. Linder, Architect, 507 Insurance Building, Denver, Colorado. A set of Contract Documents covering Contract No. 1 will be furnished upon deposit of One Hundred Dollars ($100.00) per set; and for other Contracts upon deposit of Fifty Dollars ($50.00) per set. Deposits will be refunded to bidders upon return of Documents in good condition within ten days after receipt of bids. Additional sets which contractors may obtain for the cost of reproduction must be returned within the same time limit without refund. All Documents remain the property of the Engineers and Architects and must be returned within ten days after the receipt of bids.

The character and amount of security to be furnished by each bidder are stated in the Information for Bidders in the abovementioned Contract Documents. Any bid bond shall be countersigned by a resident agent residing in Colorado. No bid may be withdrawn for at least thirty days after the scheduled closing time for the receipt of bids.

Preference is hereby given to materials, supplies and provisions, produced, manufactured or grown in Colorado, the quality being equal to articles offered by competitors outside of the State.

The City and County of Denver, Colorado reserves the right to reject any or all bids and to waive formalities as its best interests may appear.

FOR THE CITY AND COUNTY OF DENVER
By T. P. Campbell
Manager, Improvements and Parks

Bids: August 4, 1949 (271)

Grade Crossing Elimination

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ERIE R. R. GRADE CROSSING ELIMINATION, WAGARAW ROAD

Elimination of Erie Railroad Grade Crossing, Wagaraw Road, Borough of Hawthorne, Passaic County, Federal Aid Grade Crossing Project FAGM-59(1) Off.

Roadway Items

Estimated:
28,200 cu. yds. Roadway Excavation—Earth.
14,500 cu. yds. Borrow Excavation.
5,950 sq. yds. 4" Macadam Base Course.
4,860 sq. yds. 3" Pen. Mac. Surface & Inter. Courses.
630 tons Pavement, Type FA-BC.
4,680 sq. yds. 10" Rein. Conc. Pavement Surface.

Bridge Items

3,637 cu. yds. Concrete in Structures.
812,000 lbs. Structural Steel.
95,000 lbs. Rein. Steel in Structures.
Lump Sum—Temporary Detour Trestle.

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, New Jersey, on Thursday, August 4, 1949, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Grade Crossing Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and Supplements and by Section 5 of the Federal Act of September 5, 1940 (Public No. 780-76th Congress) and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, Fulton & Paterson Streets, Paterson, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all unskilled labor employed on this project shall be 65c per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be 75c per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.25 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $5,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

Bids: August 10, 1949 (277)

Grading, Drainage, Structures, etc.

PENNSYLVANIA TURNPIKE COMMISSION
Harrisburg, Pennsylvania

NOTICE TO BIDDERS.

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 A.M. (Eastern Daylight Saving Time), the 10th day of August, 1949, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and immediately publicly opened and read aloud, for the following contract and/or contracts:

For construction of grading, drainage, structures, and paving of Turnpike Section 21B-1, part of the Philadelphia Extension, in Silver Spring, Monroe, and Upper Allen Townships, Cumberland County, Commonwealth of Pennsylvania. This section being situated as follows:

Beginning at a point approximately 512 feet West of Legislative Route 507 in Silver Spring Township at Turnpike Station 321+00 (Cumberland County) thence in an Easterly direction 22,994.18 feet to a point approximately 3,200 feet East of Legislative Route 123 at Turnpike Station 551+00 (Cumberland County) a distance of approximately 4.355 miles.

The approximate quantities of the principal items are as follows:

Class I Excavation, 523,000 cubic yards.
Class II Excavation, 30,500 cubic yards.
Reinforced Concrete Pavement, 121,800 square yards.
Class A Concrete, 370 cubic yards.
Class B Concrete, 8,200 cubic yards.
Plain Steel Bars, 1,183,000 pounds.
Fabricated Structural Steel, 860,600 pounds.

For construction of grading, drainage, structures, and paving of Turnpike Section 21B-2, part of the Philadelphia Extension, in Upper Allen and Lower Allen Townships, Cumberland County, Commonwealth of Pennsylvania. This section being situated as follows:

Beginning at a point approximately 3,200 feet East of Legislative Route 123 in Upper Allen Township at Turnpike Station 551+00 (Cumberland County) thence in an Easterly direction 13,520 feet to a point approximately 170 feet West of the Yellow Breeches Creek in Lower Allen Township at Turnpike Station 698+32.73 (Cumberland County) a distance of approximately 2.56 miles.

The approximate quantities of the principal items are as follows:

Class I Excavation, 457,000 cubic yards.
Class II Excavation, 13,300 cubic yards.
Reinforced Concrete Pavement, 71,400 square yards.
Class A Concrete, 1,250 cubic yards.
Class B Concrete, 3,200 cubic yards.
Plain Steel Bars, 514,000 pounds.
Fabricated Structural Steel, 555,000 pounds.

For construction of grading, drainage, structures and paving of Turnpike Section 22A-1, part of the Philadelphia Extension, in Lower Allen Township, Cumberland County, and Fairview Township, York County, Commonwealth of Pennsylvania. This section being situated as follows:

Beginning at a point approximately 170 feet West of Yellow Breeches Creek in Lower Allen Township, Turnpike Station 698+32.73 (Cumberland County) thence in an Easterly direction 14,926 feet to a point approximately 155 feet West of Legislative Route 250, Fairview Township (York County) a distance of approximately 2.826 miles.

The approximate quantities of the principal items are as follows:

Class I Excavation, 637,500 cubic yards.
Class II Excavation, 20,300 cubic yards.
Reinforced Concrete Pavement, 108,600 square yards.
Class A Concrete, 2,400 cubic yards.
Class B Concrete, 5,600 cubic yards.
Plain Steel Bars, 546,300 pounds.
Fabricated Structural Steel, 1,609,000 pounds.

Copies of plans, specifications and other contract documents, including cross-sections, are now available and open to public inspection at the offices of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on July 27, 1949. Copies of cross-sections for each section may be purchased from the Pennsylvania Turnpike Commission for the sum of Fifty Dollars ($50.000) per set.

Specifications and contract documents for each section, exclusive of cross-sections, may be obtained from the Commission upon deposit of Ten Dollars ($10.00) for each set, such deposits to be refunded in full to any actual bidder upon return of such documents in good condition within five (5) days after the date of the opening of the bids. Refund will be made for all plans, contract documents and cross-sections returned, if the project is withdrawn from letting by the Pennsylvania Turnpike Commission. Remittances are payable to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and cross-sections.

The Pennsylvania Turnpike Commission reserves the right to award each section as a separate contract and/or in any combination of contracts.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
July 21, 1949

(Continued on page 80)

U. S. Government
(Continued from page 79)

Office of the District Engineer, Corps of Engineers, U. S. Army, 1217 U. S. Post Office and Custom House, St. Paul 1, Minnesota.—Sealed bids, in duplicate, for furnishing all labor and materials and performing all work required for Bank Protection at Landward Lock, Lock and Dam No. 2, Mississippi River, Hastings, Minnesota, will be received in this office until 11:00 A.M., C.S.T., August 3, 1949, and then publicly opened. Further information upon application. (252)

UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids will be received at Casper, Wyoming, until 10 a.m., Mountain Standard Time, August 9, 1949, and then publicly opened for furnishing and delivering the transformer transfer car for the New Casper Substation, Kendrick Project, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following office of the Bureau of Reclamation: L. J. Matthews, District Manager, 504 Conroy Building, Casper, Wyoming. No charge to prospective bidders for copies of the specifications and drawings; to others $1.25 per copy, not returnable. (269)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2733) will be received by Bureau of Reclamation, Davis Dam, Nevada, August 23, 1949, and then publicly opened for furnishing labor and materials and performing all work for the installation of electrical and hydraulic machinery and appurtenant equipment, and erection of steel structures for Davis Dam, Power Plant, and switchyard, Davis Dam Project, Arizona-Nevada. The work is situated about 30 miles west of Kingman, Arizona. Principal items are approximately: Installing five 62-200-hp hydraulic turbines; installing five 45,000-kva generators; installing 2,000,000 lbs. metalwork and steel structures; installing 1,770,000 lbs. electrical equipment; furnishing and installing 230,000 lbs. pipe and fittings; and other work. The work is divided into four schedules. Time allowed for completion will be 450 day. For particulars, address Bureau of Reclamation, Davis Dam, Nevada; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (268)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2732) will be received by Bureau of Reclamation, Tracy, California, August 16, 1949, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork, concreting, and structures, stations 2024 to station 4108+50, Delta-Mendota Canal, Central Valley Project. The work is situated from about 6 miles west of Volta to about 7 miles southwest of South Dos Palos, California. Principal items in two schedules are approximately: Excavation, all classes, 5,340,000 cu. yds.; furnishing materials and placing 151,400 cu. yds. concrete; furnishing and erecting 266 M.b.m. lumber; furnishing and laying 13,500 ft. concrete and welded steel pipe; installing 260,000 lbs. gates, hoists, and miscellaneous metalwork; and other work. Time allowed for completion will be 675 days. For particulars, address Bureau of Reclamation, Tracy, California; or Building 1-A, Denver Federal Center, Denver Colorado.

MICHAEL W. STRAUS, Commissioner. (267)

Office of the District Engineer, Corps of Engineers, U.S. Army, 1217 U. S. Post Office and Custom House, St. Paul 1, Minnesota.—Sealed bids, in duplicate, for furnishing all labor and materials and performing all work required for Upper Approach Channel Dredging, Lock and Dam No. 10, Mississippi River, Guttenberg, Iowa, will be received in this office until 11:00 A.M., C.S.T., 9 August 1949, and then publicly opened. Further information upon application. (266)

OFFICIAL PROPOSAL

RATE: $1.00 per line (or fraction) per insertion.
CLOSING DATE: 5:00 p.m. Friday for issue out following Thursday.
SEND COPY: Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

OFFICIAL PROPOSALS
(Continued from page 111)

Bids: August 3, 1949 (251)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Chapter 63, Laws of 1936, as amended, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time on August 3, 1949 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 2				
		L. KETCHUM, Dist. Engr., 109 No. Genesee St., Utica, N. Y.				
Montgomery	RC 49-80	Br. No. 1 Fultonville Village: Fonda Village., S. H. 864 Br. No. 1 Fort Plain Village: River St., S. H. 1903 Br. No. 1 Canajoharie-Palatine Bridge S. H. 8527-8528		Painting Brs.	$1,100 Plans $5	$20,000
		DISTRICT No. 3				
		WM. ROBINSON, Dist. Engr., Weigh Lock Bldg., Syracuse, N. Y.				
Wayne	FASS 49-19	Walworth-Marion Co. Rd. Proj. S-322(1)	4.38	Bit. Mac. Opt., Rd. Mix	$20,000 Plans $10	$349,000
Wayne & Seneca	RC 49-82	Seneca Falls Vill., S. H. 5100 Geneva-Waterloo, S. H. 5087A Newark-Lyons, S. H. 8028		Painting Brs.	$800 Plans $5	$15,000
		DISTRICT No. 5				
		C. R. WATERS, Dist. Engr., 65 Court St., Buffalo, N. Y.				
Erie	FAC 49-5	(Tacoma Ave. to Kenmore Ave.), Delaware Ave., City of Buffalo Proj. U1078(6)	0.40	Asp. Conc. Opt. = 0.36 mi. Misc. Work = 0.04 mi.	$13,000 Plans $5	$239,000
Erie	FASS 49-15	East Church St., Co. Rd. No. 488, Proj. S248(1)	0.38	Asp. Conc. Opt. = 0.32 mi. Misc. Work = 0.06 mi. 3 Sp. I-Beam App. Spans 28', 36' & 40' & Steel Arch 144' c-c Bearings	$12,000 Plans $5	$204,000
Niagara	FASS 49-24	Griswold St., Co. Rd. 905-A, Project S753(2)	5.06	Asph. Conc. Opt. = 5.05 mi. Misc. Work = 0.01 mi.	$14,000 Plans $5	$246,000
		DISTRICT No. 6				
		H. F. BRUMM, Dist. Engr., State Office Bldg., Hornell, N. Y.				
Chemung	RC 49-79	Elmira-Lowman, S. H. 5207 Lowman-Waverly, Pt. 1, S. H. 5048	6.92	Erosion Control	$450 Plans $5	$8,000
Chemung & Tioga	RC 49-81	Southport, Pt. 2, S. H. 28 Waverly-Owego, Pt. 3, S. H. 5257 Owego-Candor, Pt. 2, S. H. 5471		Painting Bridges	$500 Plans $5	$10,000
Steuben	FASS 49-21	Presho-Lumber City, Co. Rd. 73, Proj. S259(1)	0.40	Asp. Conc. Opt. 4 Sp. Alpha I-Beam 2 at 97'-3" and 2 at 98' Alpha $277.27	$20,000 Plans $5	$355,000
		DISTRICT No. 7				
		R. F. HALL, Dist. Engr., 444 Van Duzee St., Watertown, N. Y.				
Clinton.....	FASS 49-18	Old Military Turnpike Co. Rd., Proj. S167(3)	5.71	Triple Surf. Treat. Gravel Alpha I-Beam 84' Span I-Beam 34' 6" Span Alpha $63.00	$33,000 Plans $20	$620,000
		DISTRICT No. 8				
		J. S. BIXBY, Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.				
Orange	FGRC 49-87	Sep. of Grades of the Erie R. R. with Middletown-Montgomery, S. H. 499, Proj. FG021(3)	0.60	8" Cem. Conc. Pavt.	$12,000 Plans $5	$225,000
	RC 49-88			24' Wide Alpha. I-Bm. 3 Sp. 52'-6" Each Alpha $224.00		
Rockland	PIP 49-1	Palisades Interstate Parkway, Pt. 1, PIP 47-1 (Mt. Ivy-Gate Hill Rd.	1.72	Roadside Development	$1,000 Plans $5	$18,000
Orange Rockland Ulster	49-83	S. H. 42 Br. No. 3, S. H. 499 Br. No. 5; S. H. 1539, Br. No. 1; S. H. 5480, Br. No. B-1 & B-2, S. H. 8300, Br. No. 2, S. H. 689, Br. No. 1, S. H. 5388, Br. No. B-2, S. H. 5714, Br. No. 1, S. H. 8049-A, Br. No. 1, S. H. 141, Brs. No. 1 & 2, S. H. 229, Br. No. 3, S. H. 419, Br. No. 1, S. H. 1419, Br. No. 3, S. H. 5599-C, Br. 1, S. H. 5601, Br. No. B-1 & S. H. 8398, Br. No. 1		Painting Bridges	$4,500 Plans $5	$82,000
		DISTRICT No. 9				
		F. W. DONOVAN, Dist. Engr., 71 Frederick St., Binghamton, N. Y.				
Otsego	RC 49-86	Repair to Gr. Sep. Struct. on Unadilla-Wells Br., S. H. 5229	0.05	Repairs on a 112' Span Truss Bridge with 176' Conc. App. Spans	$3,500 Plans $5	$63,500
Broome Delaware Schoharie Sullivan	RC 49-89	Br. No. 1, S. H. 5338; Br. No. 1, S. H. 1241, Br. No. 1, S. H. 5412; Br. No. 1, S. H. 375; Br. No. 1, S. H. 8254; Br. No. 1, S. H. 5383; Br. No. 1, S. H. 5671; Br. No. 1, S. H. 8187, Br. No. 1, S. H. 5458; Br. No. 1, S. H. 5286; Br. No. 1, S. H. 5195; Br. No. 3 S. H. 5234; Br. No. 1, S. H. 8449; Br. No. 1, S. H. 8494		Painting Bridges	$4,000 Plans $5	$73,000
		DISTRICT No 10				
		J. J. DARCY, Dist. Engr., Montauk Hwy at Little E. Neck Rd., Babylon, L. I., N. Y.				
Bronx	FAMDE 49-3	Major Deegan Expressway Cont. 5AA (167th St. to Depot Place), Proj. U1082(7)	0.17	Demolition, Grading, Drainage & Ret. Wall	$30,000 Plans $10	$550,000
Nassau	RC 49-84	Hempstead-Farmingdale, Pt. 3, S. H. 9055 Hempstead-Farmingdale, Pt. 4, S. H. 9064	8.15	Roadside Development	$450 Plans $5	$8,000
Suffolk		Riverhead: Edwards & Pier Ave.		Beach Protection: Stone Jetties	6 Dep. 5% of Bid Plans $5	$42,400

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(Continued from page 80)

dition, similar period, will be 50% of deposit.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: August 18, 1949 (265)

Construction of Conduit

COMMONWEALTH OF MASSACHUSETTS
METROPOLITAN DISTRICT
COMMISSION

Sealed proposals will be received at the office of the Metropolitan District Commission, 20 Somerset Street, Boston, Mass., until 1:00 P.M., Eastern Daylight Saving Time, August 18, 1949, and then publicly opened for Contract No. 169 for the construction of a portion of the Alewife Brook Conduit, in towns of Arlington and Belmont and the City of Cambridge, Massachusetts. The portion of conduit to be constructed under this contract extends from Concord Avenue in Cambridge northerly following, in general, the course of Alewife Brook to a point in Arlington, approximately 500 feet southwesterly from Massachusetts Avenue; and includes a branch at the upper end extending westerly to the Cambridge-Belmont line. The work includes the furnishing and laying of about 2175 feet of 66-inch, 190 feet of 54-inch, 2455 feet of 48-inch and 2700 feet of 36-inch precast reinforced concrete pipe; trench excavation and refill varying in depth from 10 to 15 feet and largely below the existing ground water level; tunneling; the constructing of special highway, river and railroad crossings and of special overflows and connecting structures; the making of connections between existing lines and this conduit; the relocating of parts of certain existing water, sewer, drain, gas and cable lines; and the resurfacing of highways, sidewalks, playgrounds, lawns and other areas disturbed by the work. Each bidder shall deposit cash or a certified check as security in the amount of $20,000. A bond in at least the full amount of the contract will be required of each successful bidder to secure the faithful performance of the contract, and for the payment of all persons performing labor or furnishing materials in connection therewith. Special attention is called to the requirements as to conditions of employment to be observed and to the minimum rates of wages prescribed under the provisions of Chapter 461, Acts of 1935, by the State Commissioner of Labor and Industries for construction of this public work. A schedule of such rates is incorporated in the contract documents and is on file and may be obtained at the office of the Metropolitan District Commission. The information for bidders and the prescribed forms of proposal, contract, and performance bond, and plans and specifications may be examined at the above address, and copies thereof obtained from Karl R. Kennison, Chief Engineer of the Construction Division, upon the deposit of $10, to be refunded only to bidders or to others returning them within ten days after the opening of bids. The site of the work and sounding samples taken along the proposed conduit line may be seen by applying at the office of the Division Engineer, 107 Charles Street, Auburndale, Mass. The Commission reserves the right to waive any informality in, or to reject, any or all proposals. No bidder may withdraw his bid within thirty days after the actual date of the opening thereof. A proposal which includes for any item a bid that is abnormally low or high may be rejected as unbalanced.

WILLIAM T. MORRISSEY,
Commissioner

July 12, 1949

Bids: September 1, 1949 (259)

Bridge Construction

COMMONWEALTH OF VIRGINIA, DEPARTMENT OF HIGHWAYS, RICHMOND, VIRGINIA, JULY 14, 1949. Sealed Bids will be received at the Department of Highways, Room 400, Central Highway Office Building, 1221 E. Broad Street, Richmond, Virginia, until 10:A.M., Eastern Standard Time, September 1, 1949, for the construction of:

ROUTE: 17
STATE PROJECT: 2036-01-02 (Old 1297-AB1) (2099)
COUNTY: York and Gloucester
LENGTH & TYPE: 3,750' Series of Girder, Truss and Movable Swing Spans. All of Deck Type Construction
LOCATION: Over York River at Yorktown, Virginia Between Yorktown and Gloucester Point
CONTRACTORS WILL BE SHOWN OVER THE
WORK: 10:A.M., August 1, 1949
COST OF PLANS
COMPLETE: $20.00—No refund
SUBSTRUCTURE PLANS
ONLY: $10.00—No Refund

ITEMS & APPROXIMATE UNIT QUANTITIES	
SUBSTRUCTURE (CONTRACT NO. 1)	
Cu. Yds. Excavation:	53,000
Cu. Yds. Embankment:	73,000
Lin. Ft. Timber Piles:	15,200
Lin. Ft. Concrete Piles:	3,000
Cu. Yds. Concrete:	47,550
Lbs. Reinf. Steel:	2,445,000
Lbs. Steel Sheet Piling:	460,000
Lbs. Structural Steel:	10,175,000
M.B.M. Lumber:	8
SUPERSTRUCTURE (CONTRACT NO. 2)	
Cu. Yds. Concrete:	2,300
Lbs. Reinf. Steel:	460,000
Lbs. Structural Steel:	10,650,000
Sq. Ft. Steel Grid Flooring:	25,500
Lbs. Operating Machinery:	326,000
Electrical Work:	Lighting and Miscellaneous Items
DISTRICT OFFICE:	Suffolk

Plans and specifications are on file at the Richmond Office; Local District Office, and at the office of Parsons, Brinckerhoff, Hall & McDonald, Engineers, 51 Broadway, New York 6, New York.

Bidding proposals will be furnished upon request to contractors who have prequalified and furnished the Virginia Department of Highways with a statement detailing his experience and qualifications for constructing bridge piers in deep water by the open caisson method. Prequalification forms will be furnished upon request.

Proposal guaranty shall be certified check or bid bond in the amount shown in schedule on back of proposal form. Bid Bond shall be on form furnished by the Virginia Department of Highways.

The Commission reserves the right to reject any or all bids.

PLANS WILL NOT BE MAILED PRIOR TO RECEIPT OF PAYMENT OF COST SHOWN IN THIS ADVERTISEMENT.

Bids: August 24, 1949 (270)

Sewage Treatment Plant

TOWN OF STRATFORD, CONNECTICUT
NOTICE TO CONTRACTORS

Bids will be received by the Town of Stratford on August 24, 1949, at 8:30 P.M., Eastern Daylight Saving Time, for the construction of Sewage Treatment Plant and Appurtenances, Contract XIII.

Information may be obtained at the offices of Bowe, Albertson & Associates, Engineers, 110 William Street, New York, New York, and at the office of the Town Manager, Town Hall, Stratford, Connecticut, between the hours of 10 A.M. and 4 P.M. daily except Saturdays, Sundays and holidays.

TOWN OF STRATFORD,
CONNECTICUT
By: Harry B. Flood,
Town Manager

DATED, June 29, 1949.

Bids: August 18, 1949 (264)

NOTICE TO CONTRACTORS

ERIE RAILROAD COMPANY—OWNER

Sealed bids will be received by Mr. I. H. Schram, chief engineer of the Erie Railroad Company at the Erie Railroad Office Building corner of 12th & Coles Streets, Jersey City 2, New Jersey until 2:30 o'clock P. M. (D.S.T.) August 18, 1949, and then at the said office publicly opened and read aloud, for the construction of a passenger station at Hawthorne, N. J.

The passenger station will be a building 37'x20' constructed of concrete block with brick facing. The work will include installing plumbing, heating and electric systems, fuel oil storage tanks and the installation of water and drainage lines.

The letter of transmittal, form of bid, form of contract, specifications and accompanying plans may be examined at the office of Mr. H. A. Pasman, resident engineer, Erie Railroad Company, 168 Provost Street, Jersey City, N. J., or at office of chief engineer, Erie Railroad Company, Room 700 Midland Building, Cleveland, Ohio.

The Erie Railroad Company reserves the right to waive any informalities in or to reject any or all bids. No bidder may withdraw his bid within 48 days after the actual date of the opening thereof.

(Sgd) I. H. Schram, Chief Engineer

Bids: August 11, 1949 (272)

Bridge

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ISLAND HEIGHTS-SEASIDE HEIGHTS BRIDGE

Construction of Contract No. 3 for the Island Heights-Seaside Heights Bridge, consisting of 33 spans each 73'-0" in length and roadway approaches, in Dover Township, Ocean County, Route 37. The principal items of construction are:

Estimated:

Bridge Items

7,670 cu. yds. Concrete in Structures.
918,100 lbs. Rein. Steel in Structures.
3,861,600 lbs. Structural Steel.
38,396 lin. ft. Timber Piles.
13 M.B.M. Treated Timber.
11,000 sq. ft. Treated Timber Bulkhead.

Roadway Items

15,000 cu. yds. Borrow Excavation.
1,900 sq. yds. 8" Gravel Base Course.
1,900 sq. yds. 3" Macadam Base Course.
1,900 sq. yds. 4" Mod. Pen. Mac. Inter. Course.
214 tons 2" Pavement, Type MA-BC-1.

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, N. J., on Thursday, August 11, 1949, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

(Continued on page 82)

OFFICIAL PROPOSALS
(Continued from page 81)

Bids: August 16, 1949 (273)

Widening, Deepening and Improving Stream

NOTICE TO CONTRACTORS

Sealed proposals endorsed "Bids for Widening, deepening and Improvement to stream or creek known as Weasel Brook from Center Street to Lexington Avenue" will be received and publicly opened by the City Council of the City of Clifton, N. J., on Tuesday, August 16th, 1949 at 8:30 P. M. (Daylight Saving Time) at the Council Chamber at the City Hall, Clifton, N. J., for the widening, deepening and Improvement to stream or creek known as Weasel Brook from Center Street to Lexington Avenue.

Deposit of $20.00 is required for plans and specifications and the money will be refunded after the plans and specifications are returned in good order within ten (10) days after the bids are received.

All work to be done according to specifications, now on file in the office of the Bureau of Engineering, City Hall, Clifton, N. J., where the same may be inspected by those interested. Questionnaire must be properly, fully and sufficiently answered or bid will be considered informal and rejected.

Bidders will state price in writing, as well as in figures, and whether their figures cover all the work.

The Council reserves the right to reject any and all bids.

All proposals to be accompanied by a certified check for 5% of the amount bid as a guarantee that if the contract be awarded to the bidder he will within five days or sooner, if required, secure contract therefore, and give bond required by the Council for the completion of the work.

The successful bidder will be required to give a surety company bond with sufficient surety in such sums as may be fixed by the Council, not less than the contract price, conditioned for the faithful performance of the contract.

Where the total bid price does not exceed $1,000.00, no bond will be required.

Proposals should be addressed to William A Miller, City Clerk, City Hall, Clifton, N. J.

WILLIAM A. MILLER, City Clerk

Bids: August 11, 1949 (262)

Water Mains

NOTICE TO CONTRACTORS
Office of City Purchasing Agent
Nashville, Tennessee

1. Sealed proposals or bids will be received by the Purchasing Agent of the City of Nashville, at his office in the City Hall, until 10 o'clock A.M. on Thursday, August 11, 1949 for furnishing tools, equipment, apparatus and labor and completely installing water mains as set out in specifications and said proposals will be opened and publicly read and must not be detached from specifications. Pipe, fittings, valves, fire hydrants and jointing materials will be furnished at the trench by the City of Nashville.

2. Proposed work consists of:

(a) Installation of approximately 9705 feet of 20-inch diameter, Class 150, cast iron, bell and spigot pipe, fittings, valves, etc., including 16" cross connection, 12" stub out, 8" and 6" cross connections, construction brick valve vaults, etc.

(b) Installation of approximately 4608 feet of 12-inch diameter, Class 150, cast iron, bell and spigot pipe, fittings, valves, etc., including 6" and 8" cross connections.

3. Plans and specifications may be obtained from the Office of Robert L. Lawrence, Jr., Superintendent and Chief Engineer, Waterworks Department, Room 201 City Hall, upon deposit of $30.00 ($15.00 each job) in the form of a certified check made payable to the City of Nashville. Said deposit will be returned to all unsuccessful bidders upon return of plans and specifications or $20.00 ($10.00 each job) refunded if no bona fide bid is received.

4. The right is reserved by the City of Nashville, through its Mayor, to reject any or all bids, to waive any informalities in the bids received, and to accept any bid which in its opinion, may be for the best interest of the City.

CITY OF NASHVILLE, TENNESSEE
By E. B. Smith, City Purchasing Agt.

EMPLOYMENT

AND OTHER BUSINESS OPPORTUNITIES

UNDISPLAYED RATE

(Not available for equipment advertising)

$1.20 a Line, minimum 4 lines. To figure advance payment count 5 average words as a line.

INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.

Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.

Replies are forwarded each day as received at each of the offices mentioned without additional charge.

Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.

DISPLAYED RATE

The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.

An advertising inch is measured ¾ inch vertically on one col., 3 col.—30 inches to a page. E.N.R.

STRUCTURAL DETAILERS
WANTED
STEADY WORK
• Good Salary
VACATION
Send detailed information.
THE MARYLAND STEEL PRODUCTS CO.
BUSH & RIDGELY STREETS, BALTIMORE, MD.

WANTED: RIGGER BOSS
High Dam—Cableway—Maintenance—Operation
At least two (2) years experience actual cableway handling in responsible charge—handle very heavy loads—equipment—good salary—eighteen (18) months minimum duration—South—send reference, including salary required—complete story and telephone number to:
P-9432, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED—ENGINEERS, Architects, Draftsmen experienced in the design of sewers, sewage treatment plants, water treatment plants and industrial buildings. Also engineers to supervise construction. State qualifications, experience. Salary requirements and date available. P-1155, Engineering News-Record.

WANTED: THOROUGHLY experienced estimator for building contractor specializing in public works. Stanley W. Newman Co., Inc., Mobile, Ala.

DRAFTSMAN: STRUCTURAL steel fabricator in Baltimore area desires services of thoroughly experienced man for detailing and checking. Excellent position for properly qualified man. Please give experience in detail and salary expected. P-9383, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT and Estimator, Commercial and public building work. Apply Kuhn Construction Company, General Building Contractors, Charleston, W. Va.

WANTED THOROUGHLY experienced Estimator for well established general building contractor's office. Location—Central Indiana. State education, experience, age, salary desired and when available. P-9425, Engineering-News-Record.

ENGINEER EXPERIENCED industrial and power plant construction about four years in field plus two or three in design and drafting. Opportunity for one who knows construction responsibilities both office and job and likes them. Degree not essential. Northern Ohio City location. P-9471, Engineering News-Record.

WANTED ARCHITECTURAL Structural designers for industrial construction project. Send complete resume of education, experience, and references. Location New York City. Reply P.O. Box 25, Station C, New York 14, N. Y.

SEWAGE DISPOSAL PLANT OPERATOR
WANTED
With broad experience and ability to operate and take complete charge of a 125 m.g.d. modified aeration plant, (salary $6640-$7440 per year). Job will be filled after non-assembled competitive examination. Applications must be filed on required form before September 9, 1949. For further information write:
Civil Service Commission
Room 875, City Hall Philadelphia 7, Pa.

WANTED
ASSISTANT SUPERINTENDENT
for large open cut storm sewer contract in New York State. Permanent position with opportunity to be Superintendent within six months. Give complete information in first letter.
P-9508, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

POSITIONS VACANT

WANTED CIVIL engineering graduate (age 25 to 30) with two or three years experience in Water Works and Sewerage Design for permanent position in the Department of Public Works of the City of Salisbury, Maryland. Please submit qualifications, references, and photograph, and state salary desired. Address all communications in writing to Clarke Gardner, City Engineer, City Hall, Salisbury, Maryland.

SELLING OPPORTUNITY OFFERED

SALES TRAINEES. Engineering trained men, about 25 years old, for placement in 16-month program to learn products. Prefer C.E., Arch E., M.E., or I.E. Training in Chicago and relocation to district office upon completion. Straight salary. Selling to architects, contractors, dealers. High selection standard. Give full details, photo. Cyco Steel Products Corporation, Personnel Dept., 5701 W. 26th Street, Chicago 50, Illinois.

POSITIONS WANTED

CONSTRUCTION SUPERINTENDENT — 27 years experience in complete charge of projects consisting of: chemical plants; slip-form concrete structures; material handling and process equipment installations; grain elevators and dryers; cement plants. Under fifty years of age. Will go any location. Further details on interview. PW-8914, Engineering News-Record.

ENGINEER REGISTERED ten years experience heavy construction as estimator, superintendent, manager desires connection domestic or overseas. PW-9410, Engineering News-Record.

(Continued on opposite page)

AVAILABLE:
Registered Engineer with Thirty years experience on the design, construction and operation of industrial process and chemical plants, desires connection as chief industrial engineer, chief engineer or consultant.
PW-9483, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

POSITIONS WANTED
(Continued from opposite page)

CIVIL ENGINEER Minn. graduate, age 40, Registered Min. & Wisc. Experienced in reinforced concrete design. PW-9463, Engineering News-Record.

CIVIL ENGINEER; 34; married; registered; 10 years experience design, construction, maintenance in industrial and process plants including buildings, roads, docks, utilities, piping, mechanical equipment, machine tools. Locate N.E. or N.W. states. PW-9442, Engineering News-Record.

STRUCTURAL ENGINEER, P.E., N. Y. to take work in contract, design and details of steel, concrete and timber structures. Alson Metr. Syst. and Spanish. Efficient service assured. PW-9426, Engineering News-Record.

CIVIL ENGINEER. Master's in structural. Married. Desires connection with firm engaged in industrial building—location immaterial. PW-9429, Engineering News-Record.

CONSTRUCTION MANAGER or General Superintendent, 30 years experience in all construction phases, knows how to get work completed under adverse conditions, good organizer, pusher and cost conscious. Willing to travel. PW-9422, Engineering News-Record.

GENERAL FOREMAN, age 34, married, energetic, reliable and good all-around construction man. Sixteen (16) years experience in engineering, foreman, and superintendent capacities; heavy construction, general all-around building construction, general building maintenance, alterations, road work, utilities, etc., all trades. Capable of performing engineering duties in connection with the above; progress, estimating, drafting and take-off experience, used to directing a large force of men on a variety of projects. Excellent references. Desire permanent position with good advancement possibilities, with reliable company, preferably South or South-eastern states. Available August 15, 1949. PW-9468, Engineering News-Record.

STRUCTURAL ENGINEER, C.E., P.E. Over 20 years design experience, including 9 years in supervisory capacity. Desires responsible position. Industrial and power plants, R.R. structures, municipal buildings. Present salary $8000. Available Sept. 1. PW-9503, Engineering News-Record.

ACCOUNTANT, 40, wishes responsible job with reliable company. Full experience in all phases of construction paper work including timekeeping, payroll, purchasing records, costs, material and equipment records, field office and general office books. Anywhere. PW-9514, Engineering News-Record.

ENGINEER, EXPERIENCED, design, specifications, construction, land acquisition, trust indenture of turnpikes. Good administrator. PW-9515, Engineering News-Record.

FIELD ENGINEER—Civil Graduate—31 yrs. age. Broad experience on large scale topographic surveys and heavy construction in Mexico, South America, Middle East, and U. S. Desires connection with contractor. West or West Coast preferred. PW-9521, Engineering News-Record.

DRAFTSMAN, 3 years process piping and 3 years mechanical equipment, design and detail piping systems, some college, age 26, single. PW-9361, Engineering News-Record.

ENGINEER, 12 years top experience in Piping, Heating and Ventilation in Industrial and office Type Structures. Wishes a connection in Construction, Plant Maintenance Engineering, or Design. PW-9467, Engineering News-Record.

ON THE job training as land surveyor, western New York by young married veteran; three years mechanical drafting experience. PW-9466, Engineering News-Record.

CONSTRUCTION EXECUTIVE, experience with nation-wide chemical company, desires position in charge of construction and non-process maintenance work. PW-9494, Engineering News-Record.

CONCRETE FOREMAN, 28 years experience in concrete field. Aggregate, batch and crushing plants. 200 to 900 yds. placing and handling. Foreign position desires. PW-9474, Engineering News-Record.

SPECIAL SERVICE

Construction Costs:
Civil engineer, extensive experience, will prepare budget or competitive estimates of any structure, per diem or commission basis. SS-9469, Engineering News-Record.

USED EQUIPMENT
EXCELLENT CONDITION

2—Diamond 32x27 Hammermills @ $2700.00 Each
2—Diamond40x36 Hammermills @ $3000.00 Each
1—Diamond 15x36 Roller Bearing Jaw Crusher @ $4800.00
1—Diamond 10x20 Plain Bearing Jaw Crusher @ $2050.00
1—Diamond 10x20 Roller Bearing Jaw Crusher @ $2300.00
1—Diamond 28 ft. Bucket Elevator, Folding Type, with 10"x6"x7¾" Buckets Mounted Upon Steel Truck with Steel Wheels. Also 36" Dia x 15' Revolving screen for Bin Mounting with ¼", ½" and 1" Punched Plate. No Drives' Power Unit or Crusher Included. However, truck has provision for Mounting Crusher and Power Unit. Total @ $2650.00
2—Diamond Steel Truck with 8" Channel Frame and Plain Bearing Steel Wheels suitable for Mounting 10x20 and smaller size crusher @ $300.00 Each
1—10x40 Roller Bearing Jaw Crusher @ $1835.00
1—Diamond 30" x 5' Double Eccentric Plate Feeder with Jaw Clutch @ $600.00
1—Set of Diamond Anti-Friction Bearing Machinery for 30" Belt Conveyor 101 ft. to 150 Ft. centers @ $480.00
1—Scrubber Section—Revolving Type 36" Dia x 7 ft. Length @ $660.00

ALL PRICES FOB MINNEAPOLIS—
NET SUBJECT PRIOR SALES

DIAMOND IRON WORKS, INC.
1728 Second St. North
Minneapolis 11, Minn.
Telephone CHerry 4421

FOR SALE

Three portable coal preparation plants built by Iowa Mfg. Company, Cedar Rapids, Iowa. One new and two used less than a year. These plants are mounted on rubber tires and can be easily moved and quickly set up. Capacity 200 tons per hour, complete with crushers, screens, picking tables and loading belts, for preparing stoker fuel, oil treated, straight mine run or crushed to sizes. These plants are located near Middlesborough, Kentucky, and for further information write to

B. PERINI & SONS INC.
Box 138 Middlesborough, Kentucky
Telephones 464 and 465

FOR RENT
New and almost new Manitowoc Speedcranes

60 ton—2½ cu. yd. capacity Combination cranes, dragline and clamshells, caterpillar mounted—diesel powered. Reply

FR-8967, Engineering News-Record
330 West 42nd Street, New York 18, N. Y.

FOR SALE

¾ yd. Buckeye Clipper Shovel 2 years old. In A-1 condition. Two attachments. Dipper stick and back hoe.

MRS. W. LLOYD MOULTON
Monson, Mass. *Telephone 129-4*

PORTABLE FLOW GAGE TEST KIT

for pipes 3 to 12 inches.
Accurate measurements guaranteed.
"Meter" with a Pitot tube. All types *furnished for any size of pipe.*

ARTHUR L. COLLINS
2221 Prince Street Berkeley 5, Calif.

Bids: August 26

NOTICE OF SALE

Railway Equipment

Sealed bids will be received by the State of Louisiana, Office of the Governor, Division of Administration, Purchasing Section, 201 Capitol Annex, Baton Rouge, Louisiana, at 10:00 a.m., August 26, 1949 for the sale of Railroad Equipment located at Louisiana State Penitentiary, Angola, Louisiana, and delivered F.O.B. Angola, Louisiana, or Bains, Louisiana. Bids will be received on the following:

1—Mogul type Locomotive #44, built by American Locomotive Co., weight on drives 47 tons, total weight including water tender and fuel oil tank approximately 44 tons.
1—Prarie type Locomotive #22, built by Baldwin Locomotive Co., weight on drives 45 tons, total weight including water tender and fuel oil tank approximately 35 tons.
57—Metal fittings for wood body cane cars, standard gauge, 4 pairs wheels, 342 tons
31—Metal fittings and frame for steel body cane cars, standard gauge, 4 pairs wheels, 248 tons.
1180—Tons—60 pound rails
230—Tons—40 pound rails
292—Tons—70 pound rails
43—Tons—Spikes
66—Tons—Angle Bars
70—Tons—Tie Plates

Bidder to submit bid based on Owner delivering material onto railroad cars at Bains, Louisiana and an alternate bid if he desires to take delivery at Angola, Louisiana, the Owner to load material onto Buyer's trucks or onto barges at Tunica Landing or Angola, the Owner to deliver material onto barges.

Locomotives and cars will be taken apart into sizes that can be handled on trucks unless delivery is made by barge in which case the amount of dismantling will be such as is agreeable to Buyer and Seller. The quantities shown are approximate and scale weighing of material delivered will govern for payment.

A Bid Bond in the amount of 5% of the amount bid must accompany each bid, which amount shall be retained by the vendor as a performance bond to secure the faithful performance of the contract to be entered into between the vendor and the successful bidder or bidders. After the awards have been made said amounts accompanying the bids of the unsuccessful bidders will be immediately returned to them and/or each of them.

These bids will be publicly opened and read at same hour and date specified above, in Room 201, Capitol Annex. No bids will be received after date and hour specified.

The owner reserves the right to reject any or all bids and to waive any informalities.

State of Louisiana
Office of the Governor
DIVISION OF ADMINISTRATION
J. H. Rester
Commissioner of Administration
By
D. H. Whittington
Purchasing Supervisor

FOR SALE

Model 80, Lorain, 1¾ c.y. Shovel
Model 54-B, Bucyrus-Erie, 2 c.y. Shovel
Model TD6, Michigan, ⅜ c.y. Shovel, Backhoe, Crane & Drag
Model 18, Northwest, ½ c.y. Shovel
D7M Angle Dozers—Cable or Hydraulic
D8 Angle Dozers—Cable or Hydraulic
TD14 International Bucyrus-Erie Angle Dozer
Dump Trucks—Internationals, D60's, D70's, K11's, K6's, Chevrolet 4x4, E H Mack

Subject to Prior Sale

J. H. BEERS
R. F. D. No. 2 BANGOR, PA.
Phone: Bangor 307

"EARTHMOVERS, ATTENTION!"

Topnotch equipment, priced right, ready for immediate delivery f.o.b. Philadelphia.

International TD-18—Now $7,500. with LeTourneau Blade; Guaranteed Trade-in; Excellent condition.

TD-9 Dozershovel—Now $5,100. Bucyrus-Erie ¾ Yd., Hydraulic Track assemblies reconditioned.

NEW EQUIPMENT REDUCED

Bucyrus-Erie S-152 Scraper—Now $7,150. Demonstrator; 17 yd. heaped cap.

Woolridge Terra Cobra — Now $17,000. Model TA Tractor with TCY Scraper 18-yd. heaped capacity. Hyd. steering.

Mississippi Wagon—Now $7,450. Model 75. 14-yd. heaped capacity with International ID-9 (modified)

Phone—Baldwin 9-1950

Service Supply Corporation
20th and Erie Ave., Philadelphia 32, Pa.

IMMEDIATE DELIVERY

BPS and WIDE FLANGE BEAMS

8"	31#, 36#	40 60'
10"	42#, 49#, 54#, 57#	24 65'
12"	53#, 65#	36 50'
14"	73#, 87#, 89#, 95#	28 60'
21"	112#, 132#	40 60'
24"	100#	30 60'
27"	94#	55'
30"	116#	35'
36"	160#, 170#, 182#, 194#, 260#, 300#	35 80'

I BEAMS, ANGLES, PLATE, CHANNELS, SHIP CHANNELS

HY DRACHMAN STEEL Corp.

Warehouse — 14-23 34th Ave. Astoria, Long Island New York 57, N. Y. AStoria 8-8023—8-8096

Sales Office — 563 E. Tremont Ave. CYpress 9-5440-1

'CONTE BARGAINS'

2—Model C-104 LaPlant-Choate 30-yd Scrapers, each . $2500.

1—Model 201 Diesel Galion Grader, with cab & lights $4500.

1—Allis-Chalmers HD14 Angledozer . . . . . $4500.

1—International ID-6, Diesel rubber tired Tractor & Front Rotary Broom . . . . . $2000.

Offered subject to prior sale, f.o.b. our yards, Pittsburgh, Pa.

CONTE EQUIPMENT CORPORATION
Brushton Ave at Thomas Blvd.
Pittsburgh, Pa. PEnhurst 6400

UNUSUAL BARGAIN

FACTORY REBUILT RANSOME 27E DUAL DRUM PAVER

Unused
Since Rebuilding

R. E. BROOKS CO.
50 CHURCH ST.
N. Y. 7, N. Y. CO 7-8240
or
Hasbrouck Heights, N. J. 8-1441

SURPLUS BARGAINS

1—15 KW International Diesel Generator 120-240 v 60c radiator, instruments like new . . . $1600
1—15 KW Hill Diesel Generator 120-240 v 60c radiator, instruments new never run . . . $1600
5—15 KW Onan-Ford Gas Generator 115 v 60c reconditioned, good condition $550
2—600 HP Washington Marine Diesel, 277 rmp, all component parts and spares. New, export crated $27,500
1—1440 HP GM, Model 16-278a complete with reverse gear, compressor, e.c. $12,500
2—Superior Diesels MR8, 200 hp 1200 rmp Twin-Disc 3to1 red. gear with props. Condition perfect, pair $6,000
4—Westinghouse Reduction Gears, 2to1, for 1800 HP Diesel, New. Never used $3,500
Large lot of pumps, exhaust fans, DC Motors, switchboards, etc. We have equipment off over 35 LCIS LSMS LSTS

WOOLDRIDGE COMPANY
Box 54 Phone 2-2283
JEFFERSONVILLE, IND.

USED EQUIPMENT

1—Parsons Ditcher Model 21—18" Buckets with 21" side cutter
1—Allis-Chalmers Tractor H D 10 with Baker Blade Straight
1—Garwood Hydraulic Scoop, 8 cu. yards
1—Lorain Model 75—1¼ yd. Shovel with 60 ft. clam boom

THE HENRY H. MEYER COMPANY, INC.
110 South Howard St., Baltimore 3, Md.

SALE OR RENT

Model 6, Northwest, 1½ c.y. Shovel, New in '48.
Model 820 Lorain, 2 c.y. Shovel, New in '48.
Model 25, Northwest Crane, New in '48.
(3) Euclid Dump Trucks—Model 45FD, New in '48.

Subject to Prior Sale

J. H. BEERS
R. F. D. #2, Bangor, Pa. *Phone: Bangor 307*

RENT OR SALE—SHOP REBUILT

Lorain 82 Diesel 2 cy Shovel, unused
Lorain 30 crawler ½ cy shovel, backhoe, crane
Bay City 17 to. Truckcrane, ten wheels, like new
Lorain 15 to. MOTO Crane, ten wheels, excellent
Insley "K" 7 to. Truckcrane, rebuilt
Caterpillar D-7 hydr. & cable buildozers, rebuilt
International TD18 hydr. & cable buildozers, 1948

BENDIX MACHINERY CO., INC.
401 Broadway, New York 13 Tel: Canal 6-5693

FOR SALE

34-E Koehring Dual Drum Paver $9,500.00. Located Near Memphis, Tennessee.
¾ Yard Buckeye Shovel Attachment $750.00 Unused. Located Kenner, Louisiana.

T. L. JAMES & COMPANY, INC.
Kenner, Louisiana

REX TRUCK MIXER
4 YARD—#TM 407
FOR SALE

on Mack AK #1278 in working condition. $1,700. or best offer received before September 1st.

CONCRETE CARRIERS, INC.
800 Passaic Avenue East Newark, N. J.

FOR SALE

SHOVEL FRONT

for ¾ yard Koehring Crane Model 301. Good Condition.

HAROLD LILES
10 Byron Street Lynbrook, New York
Lynbrook, 9-8788-J

FOR SALE

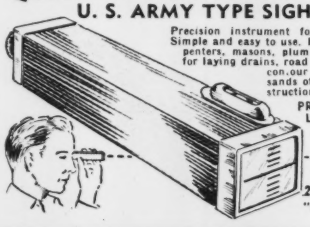
CONCRETE PAVING EQUIPMENT

2 Blaw-Knox finishers, concrete spreader, form grader, roller, 34E paver, forms, L40 Lorin crane and backhoe etc.

L. COLLIGNON
432 West Central Park, Davenport, Iowa

SURVEYING INSTRUMENTS

QUICK ACCURATE SIGHTS with
U. S. ARMY TYPE SIGHTING LEVEL



Precision instrument for preliminary survey. Simple and easy to use. Ideal for builders, carpenters, masons, plumbers, contractors, etc., for laying drains, road building, foundations, contour farming, thousands of uses. Comes with instructions.

PRICED LOW **$1.85** EA.
Ship. Chg. 15¢ Ext. Ea.

U. S. ARMY LENSATIC COMPASS

Accurate and dependable. Dial marked 0 to 360 degrees. Avoid the dangers of misdirection. Comp. with case. Used—Not Abused.

OUR $7.50 VALUE **$1.85**
Ship. Chg. 15¢ Ext.

SEND CASH, CHECK OR MONEY ORDER—SORRY NO C.O.D.

J. JACOB SHANNON & CO.
214 N. TWENTY-SECOND ST., PHILA., 3, PA.
"The Oldest Equipment House in Philadelphia"

It costs no more
to have your instruments of any make *repaired* by the makers of the WORLD'S FINEST SURVEYING INSTRUMENTS since 1871

C. L. BERGER & SONS, INC.
37 Williams Street, Boston 19, Mass.

SURVEYING INSTRUMENTS FOR RENT

DANIEL McFARLAND
624 Second Ave. San Francisco 18, Calif.

GOOD VALUES in DEPENDABLE EQUIPMENT

TRACTORS

Cat. D-2 Traxcavator—2 Buckets, $3250.
Cat. D-2—LaPlante Choate, 3000.
Cat. D-4—LaPlante Choate Dozer, 3500.
Intl. TD-14—Bucyrus Erie Angledozer, 4000.
Intl. TD-18—P.C.U. & Cable Blade, 5500.
Intl. TD-9—Bucyrus Erie Dozer Shovel, 5000.
Bucyrus Erie 3 Yd. Scraper Wagon, 750.
Cardwell Pipe Boom for D-6, 1250.

EARTH MOVING & GRADING

Two "Super C" Tournapulls, $9,000. ea.
Two Wooldridge Terra Cobras, 17,000 ea.
Four New Mississippi 8½ Yd. Dump Wagons with Intl. Diesel Tractors, 7,000. ea.
Adams Diesel Grader—75 H.P. Engine, scarifier, tandem drive, cab, 6,000.

CRANES & SHOVELS

P. & H. 1 Yd. Crane & Dragline, $8,000.
Bay City 20 Ton Cranemobile, 16,000.
Bay City ½ Yd. Shovel & Crane, 4,500.
Bay City ¾ Yd. Crane, 90' boom, 7,000.
Link Belt 6 ton Utility Truck Crane (used 2 months), 10,000.
Hyster Karry Krane, 2750.
Hughes Keenan Roustabout — swinging boom—diesel power—on R. T. Wheels NEW, 6500.
S. & L. 5 Ton Cranemasters, Case Tractors, 2750.
Northwest 105 "as is" with new parts, 2,000.

MISCELLANEOUS "SPECIALS"

Rex #160 Pumpcrete—(used one job), with 6" pipe, etc.—spare parts, $4,500.
Buffalo Springfield 6 Ton 3 Wheel Roller, 850.
Ransome 1 Yd. Stationary Mixer—skip—Elec. power, 2,000.
McKiernan-Terry 11-B-3 Pile Hammer, 3,000.
50 H.P. D.D. Gasoline Hoist & Swinger, 1,250.
Pioneer Ladder Type Trencher—15-20" x 8', 2,500.
Jaeger Concrete Road Spreader—10-14', 3,500.
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BRAND NEW . . . for operating hydraulic cylinders and hydraulic motors on tractors, bulldozers, construction machinery, lift trucks, industrial applications, etc. Delivers 8 GPM at 1200 RPM at 1000 P.S.I. using 5 H.P. Has ½" pipe thread inlet, ⅜" pipe thread outlet, ¾" shaft with flat and keyway for director or pulley drive. Has flange with 4 bolt holes for convenient mounting. Ship. wt. 22 lbs. Overall dimen.: 7"L x 5 ½"H x 5 ½"W.

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BRAND NEW control valve with built-in adjustable relief valve, will operate one double acting hydraulic cylinder or 2 cylinders as one or a reversible hydraulic motor. Valve handle latches in neutral position. Made of rugged cast aluminum alloy. Open center unloads the pump in neutral position. Throttling control allows operator to regulate the speed of movement of the hydraulic cylinder or motor. Has removable mounting brackets with 4 bolt holes, ⅜" pipe thread connections. Overall dimensions: 12 ½"H x 8 ½"D x 8"W. Ship. Wt. 17 lbs. AN EXCELLENT BUY FOR $21.95.

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Use hydraulics on arbor presses, hydraulic presses, hay lifts, manure loaders, lift trucks—push or pull, tilt or turn, press or squeeze, open or close, lift or lower—and other hydraulic and industrial applications. Use with either air or oil . . . of finest precision workmanship.

1 Double action, 1" bore, 3" stroke, will lift 770 lbs. in 1/10 of a second using Logan Pump. All steel barrel. Ideal for controls, door openers, positioning, etc. An $18.00 value. postpaid **$4.95**

2 Double action, 1½" bore, 5" stroke, will lift 1760 lbs. in one second with Logan Pump. Wt. 3 lbs. A $35.00 value..... postpaid **$8.95**

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7 Double action, 3" bore, 8 ½" stroke. All steel cylinder, will lift up to 12,000 lbs. 47,000 lbs. in 2 seconds with Logan Pump.) Complete with fittings. Wt. 12 lbs. A $78.00 value..... postpaid **$19.50**

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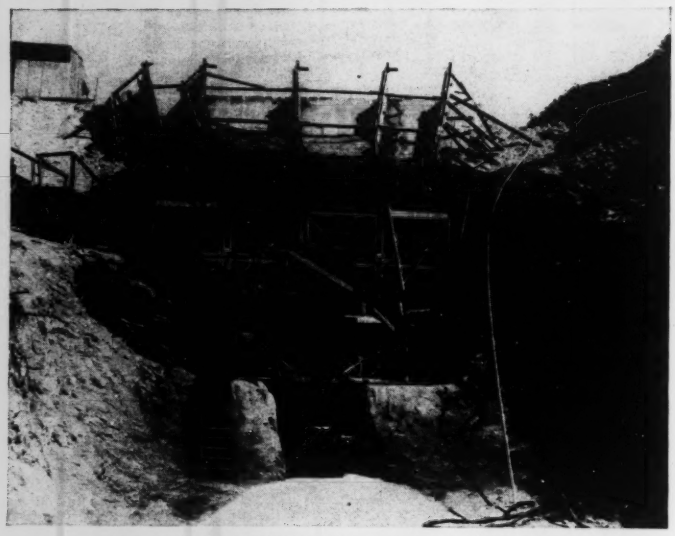
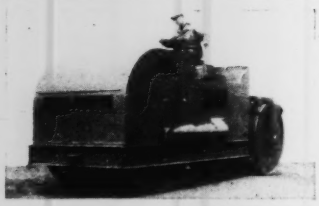


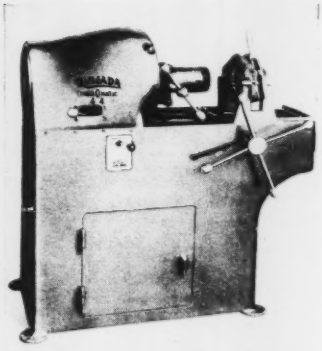
Batch Plant Is Built of Standardized Sections

Small batching plant is built of standardized sections and can be set up to meet requirements which vary from job to job. It consists of a standard center discharge hopper mounted in a steel frame sufficiently high to carry a 24-cubic-foot, or 3,000-pound, batcher underneath. From two to six of these units can be assembled to make up a portable batching plant of any number of compartments and of almost any capacity desired. The plant can be moved from job to job as an assembled unit, or it can be moved as separate, single-bin units, the same as a floor hopper. When disassembled and not being used as a batching plant, the hopper in each unit can be used as a concrete hopper. The plant can be set up to handle 2, 3, or 4 materials. Each hopper has a water-level capacity of 81 cubic feet, and a heaped capacity of 100 cubic feet. This capacity can be increased by 3-foot sideboards.—GAR-BRO MFG. CO., 2416 E. 16TH ST., LOS ANGELES 21, CALIF.



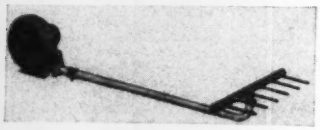
Variable-Weight Tandem Rollers

Variable-weight tandem rollers in three sizes are powered by either gasoline or diesel engines. Model KT-14 has a range from 5 to 7 tons; Model KT-19, from 8 to 12 tons; and the KT-20, from 10 to 14 tons. A gear-type oil pump supplies the low-pressure hydraulic steering system, while two high-speed low-torque clutches permit reversing the roller without shifting gears. A single-unit engine transmission and bevel-gear final drive provides a simplified, compact power train. A self-energizing hand-operated scarifier is available as optional equipment.—THE BUFFALO-SPRINGFIELD ROLLER CO., SPRINGFIELD, OHIO.



Threader Handles 4-Inch Pipe

Fast working speeds, automatic chucking, low initial cost, better, cleaner threads, and a reduction in maintenance expense are among the operating benefits claimed for the Thread-O-Matic 44-inch pipe-threading machine. It will handle pipe from ½ to 4-inches in diameter. A flip of a switch, after the pipe is placed in the spindle, automatically causes the pipe to be chucked, centered, and turning. The threader is powered by a 3-hp. 220-volt 3-phase 50-60-cycle motor.—QUIJADA TOOL CO., 5474 ALHAMBRA AVE., LOS ANGELES, CALIF.



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Smoke-preventive system operates on the principle of injecting secondary air into the fire where it is needed and mixing it with the unburned gases. The PliOjet system is a means of introducing air through over-fire air jets arranged in sets. Ten standard sets make it possible to select the arrangement that will provide adequate penetration at the maximum firing rate according to individual requirements. Every installation is engineered for specific conditions. The sets are manufactured by North American Mfg. Co., with the exclusive sale, engineering and installation rights handled by—PLIBRICO JOINTLESS FIREBRICK CO., 1800 KINGSBURY ST., CHICAGO 14, ILL.

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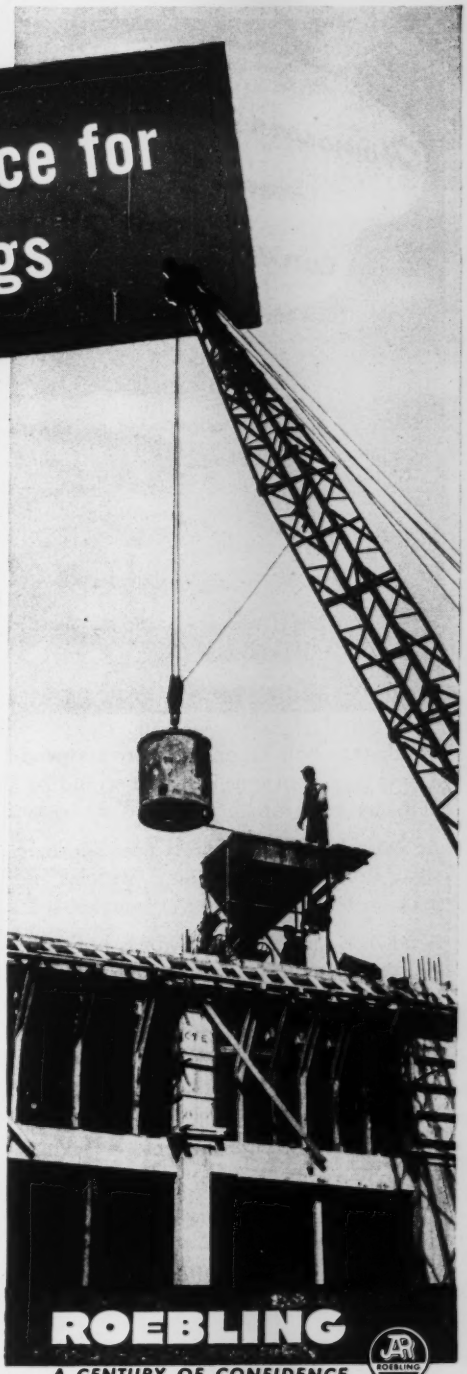
Center-dump semi-trailer can be used to haul gravel, dirt, or rock. Features include very-low center of gravity, metered control to permit door openings from 4 to 16 inches, high mechanical advantage on the door-closing mechanism, and door mechanism enclosed and protected from flow of material during dumping operations. Air or vacuum brakes, heavy-duty Timken tubular axle, single or tandem, and spare-tire carrier are standard equipment.—OMAHA STANDARD, COUNCIL BLUFFS, IOWA.

Three-Yard Tilting Mixer

Portable, tilting mixer has a capacity of 3 cubic yards. It can be powered by gasoline, diesel, or electric units. Features include: high discharge directly into bucket, dump truck, or truck mixer; controlled discharge which

(*Continued on page 90*)

Helps win the race for dollar savings



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FREE ENGINEERING SERVICE. Have your Roebling distributor help you choose the *right* wire rope for long, low-cost service. If you have any special problems in the installation or maintenance of wire rope, your distributor will call for the assistance of a Roebling engineer. John A. Roebling's Sons Company, Trenton 2, New Jersey.

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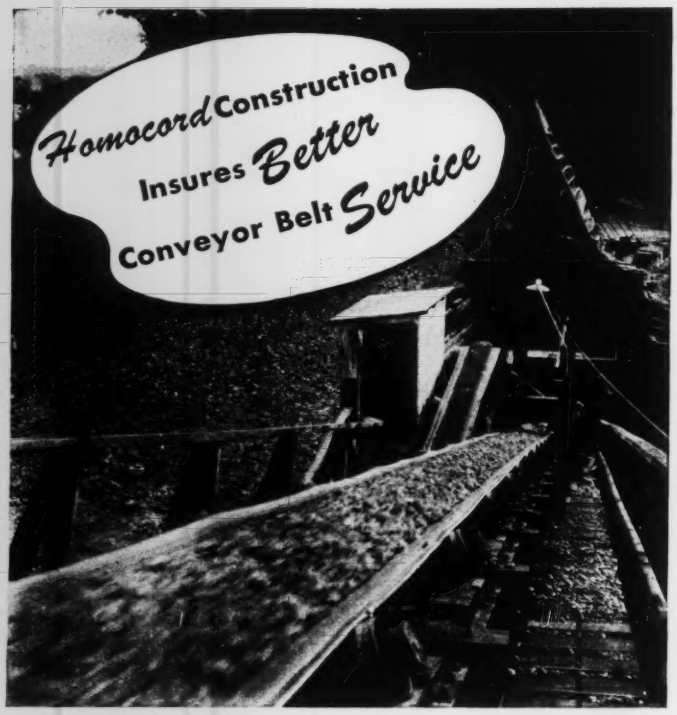

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As a result of their entirely new approach to conveyor belt design, Homocord's "Rippling Muscles" construction has ended many contractors' conveyor worries.

A new principle of flexibility is built into Homocord so that it conforms to the troughing idlers without strain. The strength members of stout cords, cushioned in Flexlastics, dissipate shock loading like the muscles in a wrestler's back. Homocord is mildew-proofed, tough in every respect and holds fasteners.

Overwhelming demand for this exclusive construction, designed only for conveyor belt use, has proved its extra advantages. Check them for yourself, before making your next investment.

If you are planning a long-lift, heavy duty conveyor, ask about the new Ray-Man "Tension-Master" Belt. It's the first rayon cord conveyor belt designed for super-strength.

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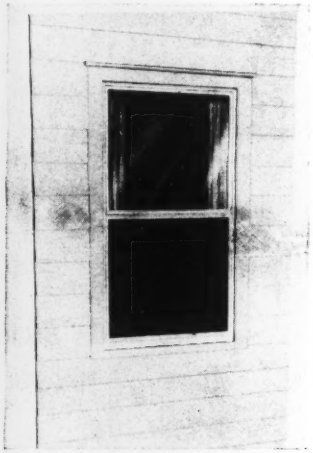
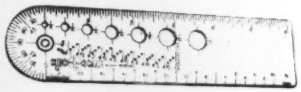
starts or stops smoothly and quickly; improved mixing action; ample overload rating; easy to clean, maintain, and set up; and consistency meter as standard equipment.—GLENWAY MAXON, 757 N. WATER ST., MILWAUKEE 2, WIS.



Vertical Slide Windows

All-metal prime windows of the vertical-slide type have been added to the Russell line. The new windows will be packaged in assembled units, including glazing and screen panels, fully painted and ready for installing in window openings. They feature low initial cost and a minimum of field labor for installation, and permit inclusion of storm sash when added to conventional types of prime windows.—F. C. RUSSELL CO., 1100 CHESTER, CLEVELAND, OHIO.



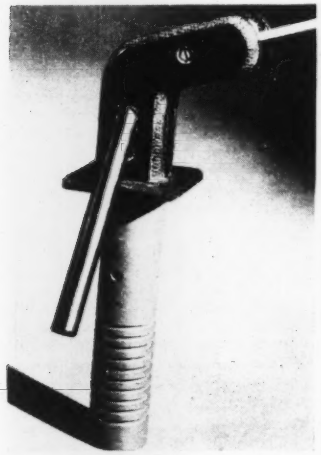
Vest-Pocket Drawing Aid

Precision drawing instrument combines a protractor, compass, square, scale and lettering device. The Circ-L-Scale is made of a crystal-clear plastic which will not warp, burn or distort. The graduations and locating lines are hydraulically pressed by dies which are accurate to 0.0002 inch.—LEE A. CUSON, 9100 ROSELAWN AVE., DETROIT 4, MICH.

Snake Bite First Aid Kit

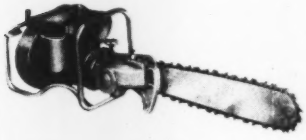
A kit for protection against the effects of rattlesnake bites sustained while making preliminary surveys or during land clearing or pioneering work is available in a size no larger

than an ordinary pocket knife. This kit weighs 1¼ ounces and can be easily carried in the pocket of men working in the field. The Compak kit provides the essentials for immediate first-aid treatment. It includes three suction cups, a vial of antiseptic, a knife blade and a tourniquet tape, along with graphic instructions for the use of the kit.—Cutter Laboratories, Berkeley 10, Calif.



Electrode Holder

This new welding electrode holder has a sharp angle design of the jaws, allowing the operator to use the rod down to the shortest possible stub. Moreover, the operator has an unobstructed view of the arc at all times and in all positions. Instant reloading with one hand is made possible by the trigger-lever that opens the self-spring jaws. It weighs only 1 lb.—Ben-Nek Holder Inc., East Haven, Conn.

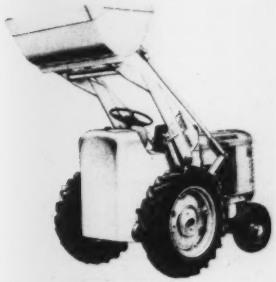


One-Man-Operated Chain Saw

The Lombard 19-in. one-man-operated chain saw is powered by a 4-hp. Homelite engine. It has a Warren high-speed chain featuring a series of depth gages which control the thickness of the chip removed by the cutter teeth, fast cutting action due to its unique plow-shaped cutting teeth, and special alloy-steel teeth which are said to operate for up to 60 hours or more without dulling. The cutter bar swivels to any desired position, and the handle bars and controls are designed to promote ease of handling in both felling and bucking operations. Weight of the new saw is 38 lb.—Lombard Governor Corp., Main and Pleasant Sts., Ashland, Mass.

Lightweight Engine

An air-cooled valve-in-head gasoline engine features maximum use of aluminum alloys to reduce weight without sacrificing sturdiness. It is rated at 2.5 to 3.75 hp. at 1500 to 2500 rpm. The cylinder block and crankcase are provided with special steel liner. Piston is aluminum with four rings. Connecting rod is duraluminum forging with replaceable shell bearing. A forged-steel counter-balanced crankshaft runs on tapered roller bearings.—Benard Engines, 521 Fifth Ave., New York 17, N. Y.

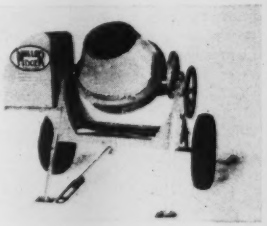


Materials-Handling Tractor

The Model TL-B Tracto-Loader is equipped with a 10-cubic-foot bucket. Hydraulically controlled, the loads can be dumped whole or in part to a height of approximately five feet. The bucket has a forward crowd action and an automatic tilt-back feature which permits getting a load without ramming. Overall length with bucket down is 9 feet 5 inches; overall width is 4 feet 6 inches; wheelbase is 4 foot 1 inch. Brake-horsepower rating is 27.8. The TL-B is said to handle 20 to 25 tons of materials per hour on a 300-foot round-trip haul.—Tractomotive Corp., Deerfield, Ill.

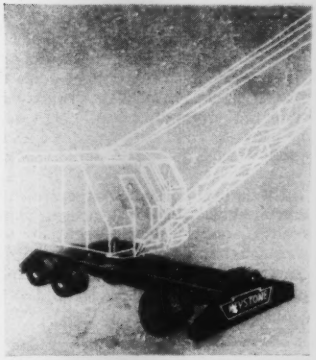
Tractor-Drawn Scraper

Tractor-drawn scraper has a struck capacity of 14.2 cubic yards; heaped capacity of 17.5. Features include 3-piece cutting edge, 65-inch-wide front-apron opening, curved bowl ejector, high yoke and ground clearance, low center of gravity, short wheel base, and equalized weight distribution. Other basic Wooldridge features are pivot-tilt forced ejection, rear-draft fulcrum leverage, boiling bowl load, and replaceable side cutter blades. Overall height of the Model TC-142 is 10 feet 9 inches; width, 11 feet 6 inches; length, with pusher, 35 feet 2 inches; wheel base, 21 inches. Standard tire size is 21:00 x 24. 16 inches. Approximate weight is 28,400 pounds.—Wooldridge Mfg. Co., Sunnyvale, Calif.



End-Discharge Mixer

Tilting concrete mixer of the end-discharge type has a capacity of 3½ cubic feet. Powered by a Model 9R6 Briggs & Stratton engine, it is driven by a heavy roller chain. Two supporting legs provide a stabilizing 4-point suspension. It is mounted on disc wheels equipped with Timken bearings and 5.50 x 16 tires.—Muller Machinery Co., Inc., Metuchen, N. J.



Self-Propelled Crane Carriage

One-man-operated self-propelled crane carriage has a 25-ton capacity. Propulsion power is obtained through the travel clutches and vertical travel shaft of the crane. The Krane Karriage is equipped with a 4-speed transmission with a speed range of 2 to 10 mph. in either direction, air-operated brakes on all wheels, and hydraulic steering.—Keystone Driller Co., 419 Wood St., Pittsburgh 22, Pa.

Manufacturers' Publications

Hose Clamps for All Purposes—Hose clamps to fit every type and size of industrial and construction hose are described in Le-Hi bulletin No. 125. More than 160 different sizes and types are described, including universal-type hose clamps, single and double-bolt clamps for shank-type couplings, interlocking-type high-pressure clamps in sizes up to 4-in. oversize, double-bolt hose clamps, and band-type hose clamps. Featured, is a group of new undersize high-pressure hose clamps of the interlocking type especially designed to fit many new hose types with small outside diameters.—Hose Accessories Co., 17th and Lehigh Ave., Philadelphia 32, Pa.

Dry-Cutting Masonry Saw—Four-page bulletin describes features and operation of Fireproofer dust-free dry-cutting masonry saw. Describes advantages said to accrue through the use of dry cutting, shows features of the patented adjustable cutting table, and lists complete specifications for saw and power unit.—Martin Fireproofing Corp., 2170 Military Road, Buffalo 17, N. Y.

Portable Builders Towers—Circular outlines the advantages of metal towers specially engineered for high speed, low cost material handling on building projects. They can be trucked or towed to the job, assembled quickly on the job, and raised to operating position with their own hoist—up to 100 ft. in height. More economical than timber towers because they can be used over and over again.—Clyde Iron Works, Inc., Duluth 1, Minn.

Insulating Plaster Aggregate—Advantages claimed in a 6-page folder for "Permalite" plastic aggregate include: Better workability, light weight, insulation, fireproofing, crack resisting, and sound absorbing.—Great Lakes Carbon Corp., 18 E. 48th St., New York 17, N. Y.

Caterpiller Bulletins—Five new bulletins have been released by the Caterpillar Tractor Co. Form No. 12112 is a 12-page booklet which graphically illustrates the workings of the Caterpillar world-wide distribution organization. It is entitled "Let's Take a Look at Your Caterpiller Dealer." Form No. 12258, entitled "Caterpillar Motor Graders Do the Job", is 16 pages in length, and features a description of the use of graders in precision ditching, bank shaping, general road maintenance, mixing road surfaces, terracing, and snow removal. Form No. 12260, entitled "Saving Tax Dollars With Caterpillar Equipment", is 16 pages in length and is dedicated to those who use equipment in connection with public works. Form No. 12311 describes a complete package of heavy-duty equipment which is Caterpillar-powered from slope stake to final grade. Form No. 12312 highlights forty years of experience in grader design by the company. It is 8 pages in length, and is entitled "Contracting with 'Cat' Motor Graders".—Caterpillar Tractor Co., Peoria 8, Ill.

Hydraulic Control Hose – A new catalog section lists many of the recommended uses for hydraulic control hose made with special wire braid, and for working pressures ranging from 300 to 5,000 lb.—The B. F. Goodrich Co., Akron, Ohio.

Carboloy-Tipped Saws – Circular tells about a saw and a portable power unit especially engineered for cutting roofing and siding materials—asphalt, asbestos, brick, stone, cement and cork board, and other abrasive materials for siding and roofing.—Carbide Saw & Tool Co., 2009-11 W. Iowa St., Chicago 22, Ill.

Troughing and Return Idlers—A compact, detailed handbook on troughing and return idlers is offered. Giving applications, dimensions and cutaway views of both ball bearing and tapered roller bearing idlers, the bulletin features the operating economics of life-sealed ball bearing idlers. This company also issues a bulletin on pulverizers for agricultural lime and road material.—Lippmann Engineering Works, 4603 W. Mitchell St., Milwaukee 14, Wis.

Railroad Cranes—An 8-pager shows the application of Thew-Lorain shovel-cranes to railroad work. Track and bridge construction, right-of-way maintenance, scrap and stores handling and other uses are shown. Cranes, clamshells, draglines, shovels, and magnets are pictured in use.—The Thew Shovel Co., Lorain, Ohio.

Minneapolis-Honeywell Data—Four new catalogs have been issued by the Minneapolis-Honeywell Regulator Co. Bulletin No. 700-1 describes the Series 700 diaphragm control valves. Bulletin No. 242-1 describes the Hi-Lift V-Port indicating-type hand-control valves. Twenty pages in length, it contains information on determining valve sizes, as well as capacity charts for liquids, air and gases, and steam. Bulletin 48-1, 32-pages in length, describes direct-connected and air-actuated liquid-level controllers. Bulletin No. 10-1 describes several types of regulating valves for water, steam, air, gas, or oil.—Minneapolis-Honeywell Regulator Co., Belfield Valve Div., Wayne & Roberts Aves., Philadelphia 44, Pa.

Mechanically-Stoked Incinerator – An interesting booklet tells about the "Morbostoker," a mechanically-stoked incinerator for garbage and rubbish. This type of incinerator consists essentially of the cylindrical main ignition chamber with the stoker mechanisms, a top charging opening with charging gate and charging container or chute, and an ash hopper with a discharge gate. The round ignition chamber is directly connected to a rectangular section combustion chamber. The booklet also describes a combination unit for handling sewage sludges, garbage, and rubbish for municipalities, and also for all kinds of industrial wastes.—Morse Boulger Destructor Co., 205 E. 42nd St., New York 17, N. Y.

Clamshell Buckets–A new catalog covers Hi-Power buckets for excavating and multi-sheave buckets for rehandling. Special advantages mentioned are penetrating digging power, ability to dig and hold big boulders, speedy rehandling and big payload capacity. —Geo. Haiss Mfg. Co. Inc. (Div. of Pettibone Mulliken Corp.) 141st to 144th St. on Park Ave., New York 51, N. Y.

Close-Coupled Centrifugal Pumps —The principal feature of this 22-page booklet is a series of head capacity tables for Motopumps which are designed for general service and are offered for duties from 10 to 25,000 gpm against heads as high as 300 ft.—Yeomans Brothers Co., 1445 No. Dayton St., Chicago 22, Ill.

Electric Hoists—A 6-page folder describes an advanced-design line of Wright Speedway electric hoists. It introduces the Speedway ½-ton to 10 ton electric hoists, mentions 21 points of superiority, gives action photographs, illustrations of each type of hoist, a cross sectional view of hoist frame and complete specifications.—Wright Hoist Division of American Chain & Cable Co., York, Pa.

Weighing by Static Pressure—A new basic theory for weighing that includes no springs or levers but involves the static-pressure principle is described in

a catalog page showing how the Hydroscale automatically scales as the load is lifted. It has no moving parts, is permanently sealed, is unaffected by temperature, and is said to be accurate within one-half percent. The Hydroscale is available in 2, 5, and 10-ton models.—HYDROWAY SCALES, INC., 7632 FENKELL AVE., DETROIT 21, MICH.

Care of Centrifugal Pumps—Revised handbook provides 16 pages of information on the care of all makes of centrifugal pumps. It lists the how and why of pump construction, tells how to compute heads, and lists causes and cures for various sources of troubles. Bulletin 08X6256A contains tables for determining friction loss, and a maintenance timetable. Other subjects covered in the bulletin include little-known facts about cavitation and how to protect pumps from its effects; water's role as a lubricant in pumps, and common mistakes in packing stuffing boxes.—ALLIS-CHALMERS MFG. CO., 1018 S. 70TH ST., MILWAUKEE, WIS.

Steel Forms for Concrete—A complete and detailed discussion of steel forms for concrete and how to use them has just been published. Explanations are given on how to cut costs by using crane-handled panels. Complete instructions on the erection of steel forms are illustrated by diagrams and photographs. Blueprints for the use of forms in special dimensions or applications, and of the various form accessories, are also found in this pamphlet. A data-securing questionnaire is included.—IRVINGTON FORM & TANK CORP., 43 CEDAR ST., NEW YORK, N. Y.

Lightweight Car Shakeout—Bulletin 130 describes a new model Robins car shakeout. The Model GS is designed to unload up to 15 hopper-bottom cars of granular material in a day. This 4-page folder shows the shakeout in use, describes its principal features, and presents information on specifications and dimensions.—ROBINS CONVEYORS DIVISION, HEWITT-ROBINS, INC., 270 PASSAIC AVE., PASSAIC, N. J.

Composite Deck Bridges—Booklet shows installation of factory fabricated timber and concrete bridge deck. Erection techniques, pressure treatment of timber members, financial economies, elimination of formwork and shoring, reduction in work crews are among the features described. Bridges comply with P.R.A. and American Association of State Highway Officials standards. —TIMBER STRUCTURES, INC., BOX 3782-(CL), PORTLAND 8, ORE.

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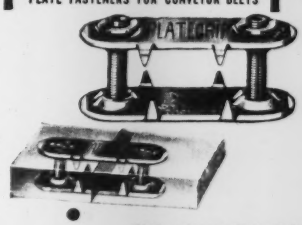

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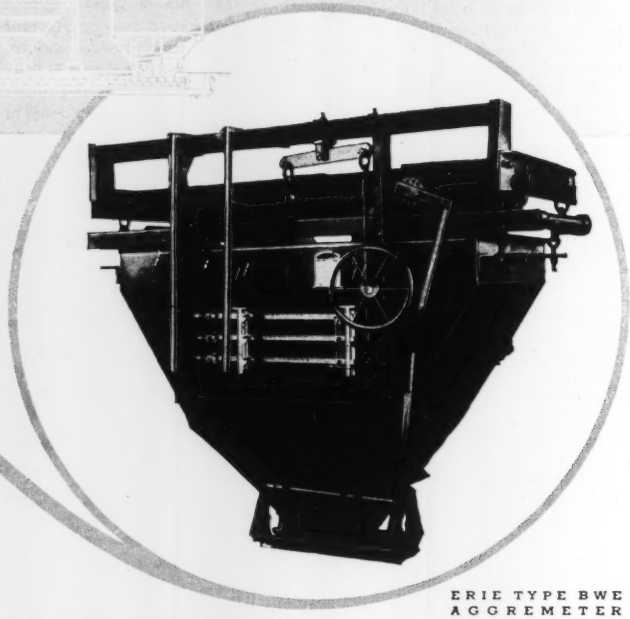

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MB-2	270 to 304 bbls.	CTBS	98 Cu. Yd.	230 to 260 bbls.	2 — Cu. Yd.
MB-3	437 to 492 bbls.	CTBS	118 Cu. Yd.	275 to 308 bbls.	3 — Cu. Yd.
		CTBS	160 Cu. Yd.	330 to 375 bbls.	4 — Cu. Yd.
		CTBS	202 Cu. Yd.	380 to 430 bbls.	5 — Cu. Yd.
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READER COMMENT

Re: Student Chapters

Sir: Undoubtedly, many engineers have read with interest your fine editorial "Too Many Student Chapters" (ENR March 10, p. 9) and the two excellent letters you subsequently published under "Reader Comment."

Your additional comments on Mr. Butler's letter (ENR May 26, p. 64) helps to clarify any misunderstanding which may have developed between the supporters of ASCE and NSPE in regard to your thoughts on the advisability of the formation of student chapters, particularly in the larger schools. It would seem that even small schools which have two or more branches of engineering would find a student chapter of NSPE worthwhile and beneficial.

When engineering students graduate and enter practice, whether it be civil, mechanical, electrical, chemical, mining, or other branch, many of them will want to gain state registration and recognition as professional engineers. The majority will, or at least should, want to participate in an engineering organization for the purpose of advancing their professional welfare and status, and have something to say about engineering matters on all three levels; their community (local chapter), their state (state society), and their nation (NSPE). Would it not then seem logical that student engineers be given the opportunity and encouraged by the older engineers to participate in an over-all engineering organization devoted exclusively to the non-technical problems of all engineers regardless of branch. Student engineers should be interested, particularly during their senior year, in the professional, ethical, social and economic problems of their chosen profession.

ENGINEERING NEWS-RECORD, through its editors, has made a big contribution toward gaining an answer to the question concerning student chapters. Your frank statement that "no plan can succeed unless the pride and professional jealousies that have bedeviled the intersociety relations for years are put aside" seems to be a fact that needs full consideration.

The National Society of Professional Engineers does not in any way infringe upon nor take away any of the pride and esprit de corps which all engineers naturally hold for their particular field of engineering. At least that is the experience in this district where our chapter has every registered professional engineer (100 percent) as a member. While a majority of them are civil engineers, there are also electrical, mining, drainage and agricultural engineers who hold membership in their respective Founder society.

A. O. NELSON
President, Ninth District Chapter
Minn. Assoc. Prof. Engrs.
Bemidji, Minn.

Prestressed Foundations

Sir: Prestressed concrete has great possibilities for use in turbine foundations. The longitudinal and transverse girders of turbo-generator supports are subject to heavy and complex loadings. In addition to the static loads, horizontal loads due to expansion, rotation, torque and guide bracket pressure are being applied to them. Furthermore, the combined deflection of these girders due to flexure, shear and shrinkage is limited to 0.01 to 0.02 in. It is also required that the natural frequency of these girders shall be different from that of the unit, in order to avoid resonance. At the same time, the size of the girders is limited, and for the transverse beams the space is seldom adequate.

Prestressed concrete is ideally suited for these girders. The prestressing cables would be installed in small tubings cast integrally with the concrete. The tubings, by the use of steel pipes, would also act as ordinary reinforcing for the dead load. After shrinkage and initial plastic flow have taken place, the cables would be stressed to 140,000 or 160,000 psi. Advantages of this system include: The whole concrete section acts in compression; complete elimination of cracks; greatly increased resistance to shear stresses and deformations; elimination of bond and shrinkage computations; and eccentric prestressing produces slight upward camber, thus neutralizing the deflections due to gravity loads.

One major advantage of a prestressed turbine foundation is that it is susceptible to field adjustment throughout the economic life of the turbo-generator. This, of course, is not true with conventional concrete supports, since once poured and the concrete hardened, no further adjustments are possible.

The prestressing operation does require specially skilled labor and its initial cost may be higher than conventional concrete. However, the increased cost for turbine foundations is trivial when compared to the total cost of the foundation and of the unit. Consequently, this system has great possibilities.

PAUL ROGERS,
Structural Engineer
Chicago 25, Ill.

Beam Design Without Formulas

Sir: The subject discussion by Mr. Ellis on page 64 of ENGINEERING NEWS-RECORD for June 23 interests me.

Allowing for a couple of obvious typographical errors, the procedure cited by Mr. Ellis does well enough for a trial design, except that the area of the concrete that is displaced by the compression steel should be deducted from the cross section of the concrete. To compensate, the computed trial value of the area of compression steel should be increased about 25 per cent.

In practical design, the next step is to determine the actual number and sizes of rods that will be used to conform to the computed steel areas. Tension steel will require 4—1ϕ rods (3.16 sq. in.). Immediately it is noted that if this steel is placed in one layer, the specified 10-inch width of beam is too narrow—the width must be at least 12⅛ inches. For a 12½-inch beam width no compression steel is required, so a question of economical design is presented. If the beam width is restricted to 10 inches, considerations of beam anchorage and other details may decide the use of 4—⅞ϕ rods (1.24 sq. in.) as compression steel.

Check analysis of this trial beam section by use of the transformed-section method is advisable. The values of some factors will be slightly different from the computed trial values, and the resulting unit stresses will be:

f_c = 1310 psi
f_s = 19,900 psi
f_c' = 8,900 psi

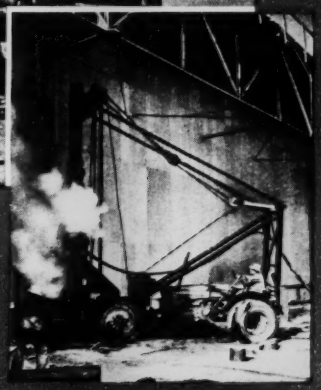
These stresses do not exceed the specified limits. The unit stress in compression steel naturally will be low because compression steel and concrete work together.

Consideration of the length of a reinforced concrete beam in proportion to its width is also important. The full specified value of f_c can be used if the beam length does not exceed about 24 times its width. If the beam exceeds this proportionate length some reduction in the allowable value of f_c should be applied.

A. H. DAVISON
Civil engineer
Glens Falls, N. Y.

NO JOB TOO LARGE

...NO JOB TOO SMALL



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